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UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT

NOVEMBER 2000

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CONTENTS

1. Introduction

2. Global Data Monitoring Statistics

3. Composite Observing Systems for the North Atlantic (COSNA)

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.
N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for ships, fixed buoys and platforms.
Standard of comparison	:Background field from UKMO global model.
Observation times	:00, 06, 12, 18 UTC
Elements monitored	:Mean sea level pressure (hPa). :Wind speed ($m\ s^{-1}$). :Wind direction (Degrees).

Parameters monitored

:NOBS	:Number of observations received excluding duplicates.
:NGE	:Number of observations with gross errors.
:PGE	:Percentage of observations with gross errors.
:SD	:SD of difference of observations from background values excluding those with gross errors.
:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $m\ s^{-1}$	(wind speed),
	≥ 30 degrees	(direction).
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
BOAB	ALL	P	SUR	35	5	14	6.0	-0.9	6.1
CG2960	ALL	P	SUR	88	0	0	5.2	4.8	7.1
C6QE3	ALL	P	SUR	29	0	0	1.9	6.3	6.6
C6RF6	ALL	P	SUR	37	2	5	3.0	-5.9	6.6
ELRU8	ALL	P	SUR	22	0	0	7.0	4.4	8.3
ELVJ9	ALL	P	SUR	70	1	1	4.0	-4.3	5.9
ELXZ7	ALL	P	SUR	69	0	0	1.2	6.2	6.3
KMJL	ALL	P	SUR	38	0	0	0.9	-4.5	4.6
MXAR9	ALL	P	SUR	24	0	0	6.1	0.5	6.2
MXBD6	ALL	P	SUR	73	1	1	1.3	-4.3	4.5
OZLB	ALL	P	SUR	45	0	0	2.2	-4.1	4.7
OZNC2	ALL	P	SUR	30	0	0	1.9	-4.9	5.3
P3YR5	ALL	P	SUR	36	1	3	1.4	5.6	5.8
SHIPBF	ALL	P	SUR	21	9	43	4.3	-2.8	5.1
UAIS	ALL	P	SUR	20	0	0	1.6	-5.2	5.4
UBCB	ALL	P	SUR	27	0	0	1.9	10.5	10.6
UBDN	ALL	P	SUR	24	0	0	1.5	4.7	5.0
UBHT	ALL	P	SUR	23	2	9	2.0	4.4	4.8
UCUC	ALL	P	SUR	60	60	100			
UDDC	ALL	P	SUR	68	2	3	1.7	-4.1	4.4
UGWB	ALL	P	SUR	21	2	10	2.4	8.3	8.6
UHVF	ALL	P	SUR	27	0	0	1.2	4.0	4.1
UHVW	ALL	P	SUR	22	0	0	0.9	4.1	4.2
UIDS	ALL	P	SUR	24	1	4	1.0	-4.4	4.5
VCJM	ALL	P	SUR	29	29	100			
VCRT	ALL	P	SUR	34	0	0	1.3	-4.8	5.0
VGRT	ALL	P	SUR	24	1	4	8.5	-6.8	10.9
VRVI2	ALL	P	SUR	34	0	0	0.9	6.0	6.1
44138	ALL	P	SUR	83	5	6	6.3	-1.4	6.5
8PPF	ALL	P	SUR	42	0	0	1.0	-4.3	4.4
9VRA	ALL	P	SUR	62	0	0	1.1	-5.4	5.5
WIND SPEED									
DDPH	ALL	SPEED	SUR	31	1	3	9.0	8.8	12.6
DEOF	ALL	SPEED	SUR	21	0	0	3.8	5.1	6.4
DGCDFD	ALL	SPEED	SUR	48	0	0	4.8	6.3	7.9
EIDX	ALL	SPEED	SUR	23	0	0	3.4	5.2	6.2
LACT5	ALL	SPEED	SUR	25	1	4	3.8	5.4	6.6
LAJV4	ALL	SPEED	SUR	43	1	2	4.7	7.6	8.9
PJVB	ALL	SPEED	SUR	71	2	3	4.1	6.8	7.9
P3RX4	ALL	SPEED	SUR	21	1	5	4.5	10.9	11.8
SXYY	ALL	SPEED	SUR	23	1	4	4.6	6.8	8.2
VRUN4	ALL	SPEED	SUR	24	0	0	4.0	5.0	6.4
ZCAO7	ALL	SPEED	SUR	52	3	6	6.5	6.3	9.1
3FTW	ALL	SPEED	SUR	67	0	0	4.3	10.4	11.2
62108	ALL	SPEED	SUR	613	3	0	3.8	-7.6	8.5
63116	ALL	SPEED	SUR	34	0	0	3.7	-6.0	7.1
9MBQ	ALL	SPEED	SUR	33	0	0	5.8	5.8	8.3
WIND DIRECTION									
ELWT5	ALL	DIRN.	SUR	23	0	0	40.5	32.5	51.9
UCUD	ALL	DIRN.	SUR	26	0	0	84.3	-13.6	85.4
VRWC8	ALL	DIRN.	SUR	34	0	0	23.9	32.0	39.9
44138	ALL	DIRN.	SUR	21	0	0	94.3	-18.4	96.1

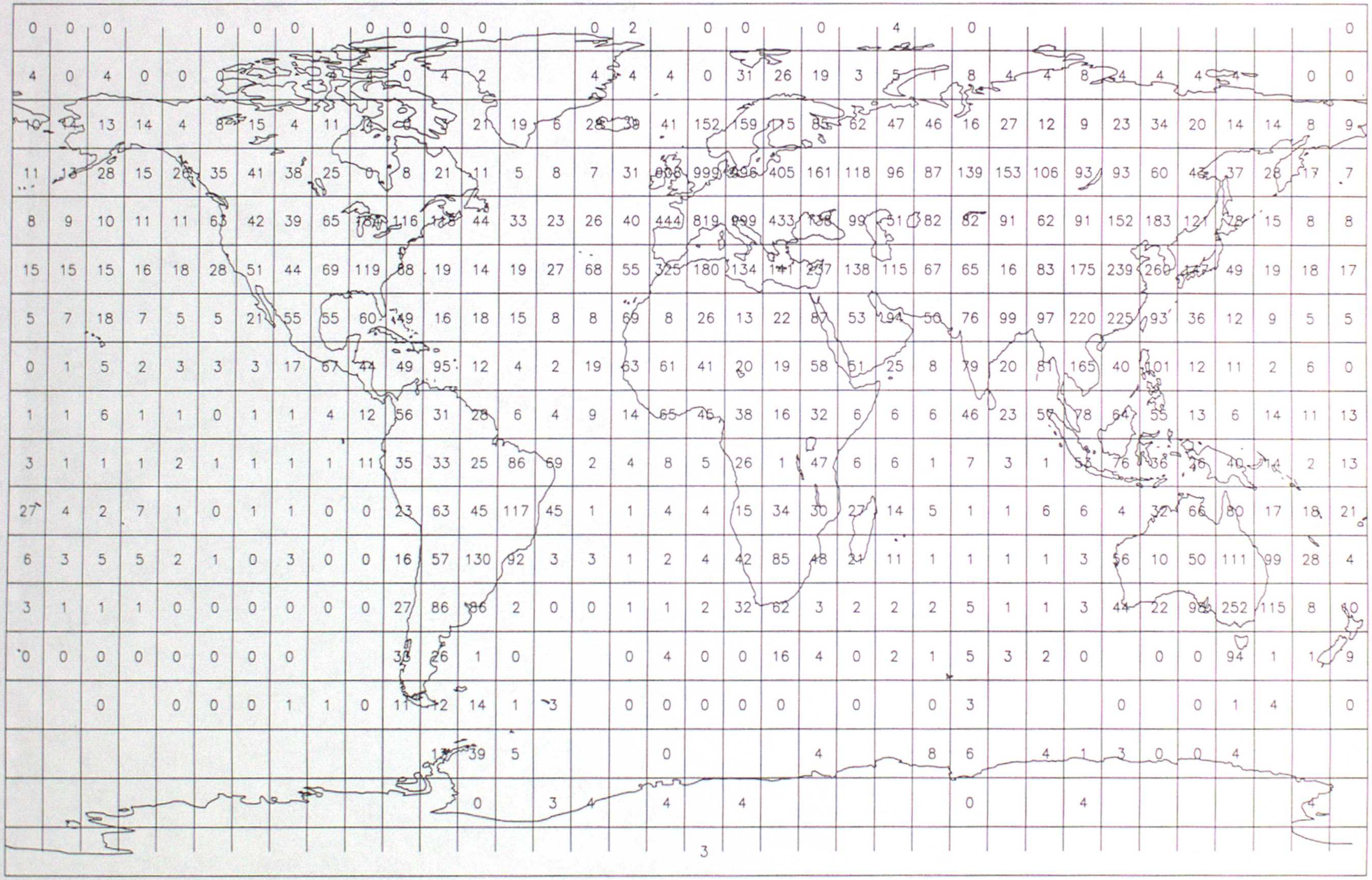
AVAILABILITY – SHIP/SYNOP – NOVEMBER 2000

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 21518

FIGURE 1



0	0	0			0	0	0		0	0	0	0			0	2		0	0		0		4		0										0
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10	14	13	14	4	8	15	4	11	[illegible]	[illegible]	[illegible]	21	19	6	28	30	41	152	159	175	85	62	47	46	16	27	12	9	23	34	20	14	14	8	9
11	13	28	15	26	35	41	38	25	0	8	21	11	5	8	7	31	808	999	996	405	161	118	96	87	139	153	106	93	93	60	43	37	28	17	7
8	9	10	11	11	63	42	39	65	180	116	118	44	33	23	26	40	444	819	999	433	138	99	51	82	82	91	62	91	152	183	121	78	15	8	8
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		0		0	0	0	1	1	0	11	12	14	1	3		0	0	0	0	0		0		0	3				0		0	1	4		0
											13	39	5				0				4			8	6		4	1	3	0	0	4			
												0		3	4		4		4						0			4						4	
																		3																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)	
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
17546	-36.8	69.1	ALL	P	SUR	327	0	0	1.1	-4.9	5.1
17642	-39.3	-0.7	ALL	P	SUR	782	1	0	1.3	4.4	4.6
23589	-26.4	49.4	ALL	P	SUR	534	241	45	1.4	0.4	1.5
23929	15.5	73.8	ALL	P	SUR	25	0	0	10.1	-3.8	10.8
31953	-20.8	-40.7	ALL	P	SUR	687	68	10	2.9	8.4	8.9
33585	-40.6	-11.6	ALL	P	SUR	311	44	14	6.9	-1.7	7.1
41529	43.6	-18.1	ALL	P	SUR	21	21	100			
46561	30.9	-172.3	ALL	P	SUR	194	0	0	0.7	-4.0	4.0
46624	55.5	164.6	ALL	P	SUR	434	61	14	6.8	-2.8	7.3
61524	39.0	15.9	ALL	P	SUR	162	79	49	2.0	-0.8	2.1
WIND SPEED											
17557	-36.6	80.5	ALL	SPEED	SUR	748	0	0	2.2	-6.8	7.2
46657	51.2	-151.0	ALL	SPEED	SUR	210	0	0	3.9	-5.2	6.5
WIND DIRECTION											
46660	47.0	-141.5	ALL	DIRN.	SUR	211	16	8	106.0	48.7	116.7

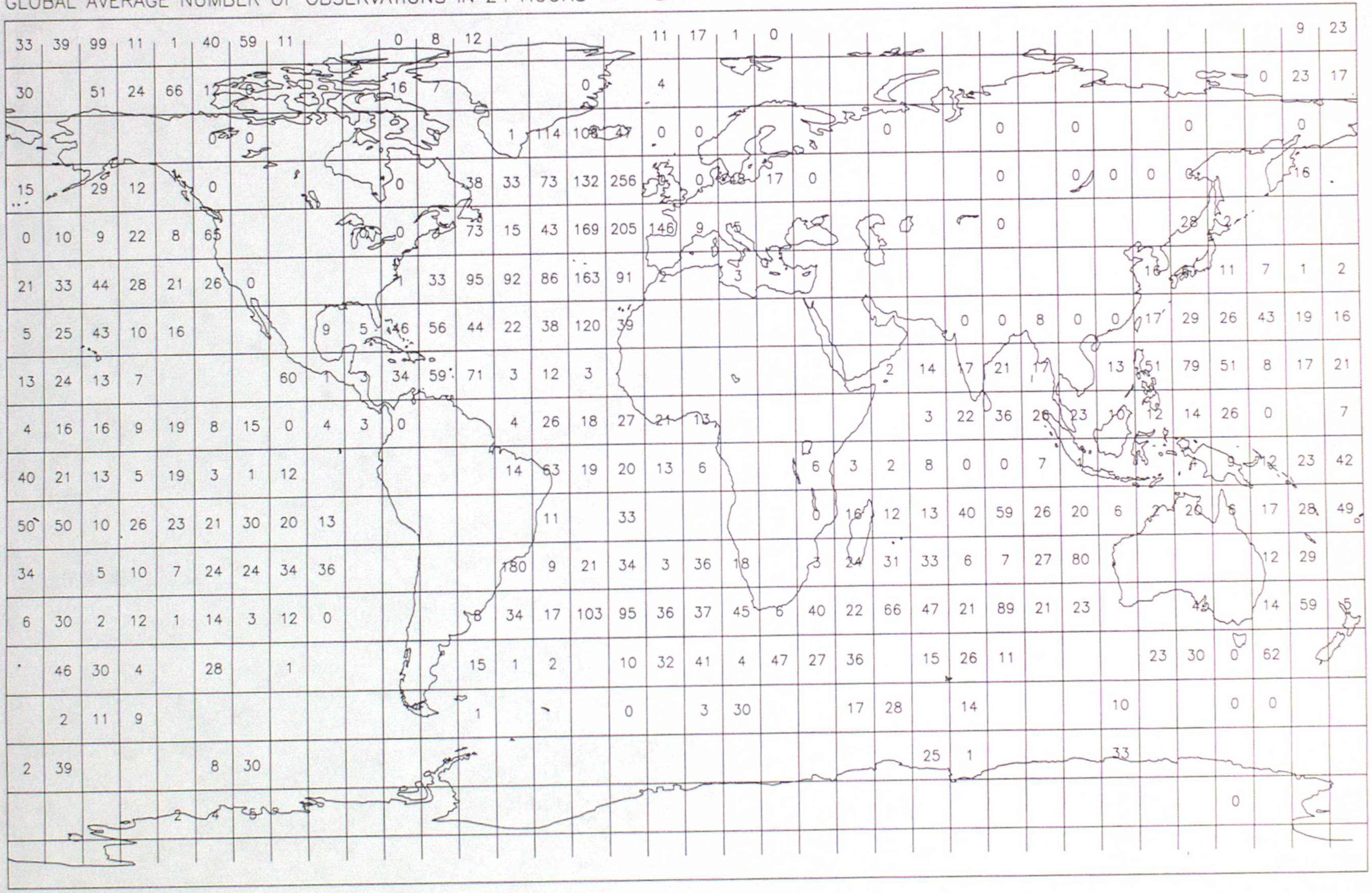
AVAILABILITY – DRIFTER – NOVEMBER 2000

MAIN HOURS ONLY

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 8174

FIGURE 2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6 30 2 12 1 14 3 12 0 8 34 17 103 95 36 37 45 6 40 22 66 47 21 89 21 23 48 14 59 5
46 30 4 28 1 15 1 2 10 32 41 4 47 27 36 15 26 11 23 30 0 62
2 11 9 1 0 3 30 17 28 14 10 0 0
2 39 8 30 25 1 33
2 4 5 0

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
62056	32.8N	21.8E	625	S8	83	1	1	2	2.0	-5.2	5.6
62790	12.1N	24.9E	674	MS	84	5	6	5	1.2	4.1	4.3
63602	3.1N	30.9E	1204	S	58	55	95	62	4.3	8.0	9.1
63801	4.9S	29.6E	882	S8	34	1	3	0	1.2	7.5	7.6
68030	18.5S	25.6E	1071	8	52	1	2	0	1.1	4.8	4.9
68038	20.5S	26.0E	903	8	54	0	0	2	1.6	4.2	4.5
68338	26.9S	24.6E	1234	S8	51	50	98	0	0.0	0.0	0.0
68396	26.5S	31.3E	641	S8	47	0	0	4	1.6	4.0	4.3

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
24671	63.9N	135.9E	402	MS	115	4	3	0	3.7	6.6	7.6
24688	63.3N	143.2E	741	MS	120	30	25	50	4.8	5.8	7.5
25621	64.0N	158.9E	683	MS	82	2	2	0	3.6	4.3	5.6
30554	54.5N	113.6E	995	MS	120	0	0	0	4.0	6.0	7.2
30669	53.1N	117.5E	708	MS	24	0	0	0	1.2	-4.7	4.9
30967	49.9N	115.8E	623	MS	85	0	0	0	1.9	-7.1	7.3
36982	41.9N	78.2E	3635	S7	109	2	2	36	1.7	-4.0	4.3
40726	36.8N	45.7E	1384	MS	95	1	1	0	0.8	4.2	4.3
40741	36.6N	61.2E	235	MS	98	0	0	0	1.1	-4.5	4.6
41254	23.1N	57.7E	1755	S8	79	79	100	0			
41396	16.0N	48.9E	700	MS	56	0	0	0	0.6	7.3	7.3
41466	13.7N	44.1E	1402	8	47	0	0	0	0.6	-5.5	5.5
41696	29.0N	66.6E	2015	S	44	19	43	2	0.6	-0.9	1.1
44416	28.6N	81.6E	720	MS	42	2	5	2	1.4	4.7	4.9
47022	40.8N	128.2E	1200	S	64	0	0	0	0.9	4.7	4.8
51334	44.6N	82.9E	321	M	118	0	0	34	2.6	4.9	5.5
51379	44.0N	89.6E	794	M	119	0	0	28	2.3	4.2	4.8
51495	43.5N	91.6E	874	M	120	0	0	5	2.3	9.8	10.1
52602	38.8N	93.4E	2734	S	120	0	0	0	1.5	-5.6	5.8
52955	35.6N	100.8E	3201	S	119	0	0	0	0.9	12.7	12.7
53083	44.6N	114.2E	1183	M	119	0	0	58	3.2	4.7	5.7
53480	41.0N	113.1E	1416	M	120	0	0	28	2.5	4.4	5.1
54386	41.4N	128.2E	1018	M	120	0	0	36	2.5	4.1	4.8
54587	39.1N	123.2E	-52	M	112	1	1	3	1.4	-4.6	4.8
56146	31.6N	100.0E	339	S	119	119	100	0			
56385	29.5N	103.3E	3049	S	119	0	0	34	1.9	-5.8	6.1
56444	28.5N	98.9E	3488	S	118	87	74	62	0.7	13.7	13.7
56462	29.0N	101.5E	2994	S	119	0	0	0	1.5	9.3	9.4
57006	34.6N	105.8E	1143	M	119	0	0	4	1.9	5.0	5.3

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	40	0	0	5	2.3	-5.8	6.2
80442	8.9N	67.4W	100	MS	96	31	32	0	0.9	0.3	0.9
82326	3.8S	62.1W	48	MS	75	0	0	0	1.7	4.3	4.6
82704	7.6S	72.7W	170	MS	75	1	1	3	2.0	-4.4	4.8
82765	7.3S	47.5W	193	MS	75	0	0	0	1.2	4.2	4.4
83214	10.3S	54.9W	285	M	45	0	0	53	4.2	-4.1	5.9
83235	12.4S	46.4W	604	MS	79	1	1	1	1.5	7.0	7.2
83319	14.7S	52.4W	315	MS	75	0	0	0	1.3	4.3	4.5
83332	14.1S	46.4W	826	MS	79	10	13	0	0.8	13.3	13.3
83361	15.6S	56.1W	151	MS	77	0	0	0	1.5	4.5	4.7
83408	14.3S	43.8W	447	MS	74	1	1	0	0.8	11.7	11.7
83488	17.8S	42.9W	1097	MS	80	80	100	0			
83531	18.6S	46.5W	940	MS	77	1	1	0	1.0	-6.7	6.8
83587	19.9S	43.9W	850	MS	79	0	0	1	1.2	-7.4	7.5
83722	22.3S	49.1W	590	MS	102	0	0	0	0.8	-4.2	4.3

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
83773	23.1S	48.9W	793	MS	80	1	1	0	1.0	-10.6	10.6
83836	25.5S	50.6W	837	MS	79	0	0	0	0.9	-5.3	5.4
83953	30.9S	55.5W	231	MS	79	0	0	0	1.0	-10.7	10.7
84401	5.2S	80.6W	49	MS	87	0	0	0	1.0	4.8	4.9
84455	6.5S	76.4W	281	MS	65	0	0	0	1.2	4.5	4.7
84472	7.1S	78.5W	2620	S	40	0	0	0	1.2	-6.2	6.3
84474	7.2S	76.7W	350	S	67	0	0	0	1.5	9.0	9.1
84501	8.1S	79.0W	26	MS	68	2	3	0	0.9	4.5	4.6
84686	13.6S	72.0W	3248	S	89	0	0	0	0.9	-5.3	5.4
84688	13.7S	73.4W	3444	S	34	0	0	0	0.8	-8.7	8.7
84720	14.9S	75.0W	567	MS	42	0	0	0	1.1	4.8	4.9
84782	18.1S	70.3W	468	MS	68	0	0	0	1.3	9.4	9.5
85140	14.3S	67.4W	140	MS	58	0	0	0	2.3	4.2	4.8
85141	14.5S	67.6W	204	MS	58	1	2	2	1.4	4.4	4.6
85264	18.5S	64.1W	1998	S	56	56	100	0			
85312	19.8S	63.9W	992	S	45	1	2	2	1.9	-8.6	8.8
85394	22.8S	64.3W	381	MS	45	0	0	0	2.0	4.2	4.7
85406	18.3S	70.3W	55	M	117	0	0	2	1.5	5.8	6.0
85418	20.5S	70.2W	48	M	119	0	0	1	1.3	4.1	4.3
85432	22.5S	68.9W	2320	S8	82	0	0	0	0.6	6.5	6.5
85442	23.4S	70.4W	140	M	119	0	0	0	0.9	4.0	4.1
85836	43.6S	71.8W	277	M	42	0	0	0	1.9	4.2	4.6

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
70194	66.6N	145.3W	431	S	94	94	100	0			
71060	65.6N	118.1W	230	MS	112	112	100	0			
71506	66.9N	136.3W	720	MS	113	0	0	3	1.6	-5.2	5.4
76118	30.4N	109.7W	1040	MS	35	0	0	0	0.6	-10.7	10.7
76243	28.7N	100.5W	250	MS	84	0	0	80	1.5	5.2	5.4
76412	24.8N	107.4W	39	MS	52	0	0	98	1.1	7.7	7.8
76658	19.2N	103.7W	494	MS	24	0	0	0	0.6	6.6	6.6
76743	18.0N	92.9W	10	S	95	0	0	0	1.1	5.8	5.9
76773	17.8N	97.8W	1650	MS	44	0	0	0	0.8	4.2	4.3
76903	14.9N	92.3W	118	MS	95	0	0	0	0.6	6.2	6.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	56	1	2	0	0.8	10.6	10.6
92036	2.4S	147.4E	1	M	238	164	69	0	0.7	1.6	1.7
92068	10.0S	149.4E	1005	MS	49	1	2	2	1.3	-4.2	4.4
94130	14.8S	131.9E	120	MS	115	0	0	0	1.0	5.8	5.9
94868	37.8S	145.0E	35	MS	119	0	0	0	0.6	9.7	9.7
96505	3.7N	115.7E	920	S8	52	52	100	0			

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	90	0	0	0	0.8	7.7	7.7
04416	72.6N	38.4W	3202	S	98	2	2	1	1.1	-4.5	4.6
06605	47.1N	7.1E	1599	S8	124	0	0	1	1.0	-4.7	4.8
06685	47.0N	9.1E	515	MS	124	0	0	10	1.7	5.8	6.0
10557	50.5N	11.1E	845	S8	360	360	100	0			
12140	54.4N	18.7E	2	MS	118	0	0	0	0.6	7.4	7.4
13269	44.3N	19.9E	176	MS	114	1	1	0	0.9	7.3	7.4
14554	44.9N	18.4E	140	S	51	11	22	0	0.8	-13.8	13.8
14650	43.8N	18.0E	972	S	58	58	100	0			
16470	36.8N	12.0E	191	MS	79	0	0	0	0.8	-4.2	4.3

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
17092	39.8N	39.5E	1218	S8	120	0	0	0	1.0	7.8	7.9

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89264	71.4S	68.9W	780	S	151	0	0	0	0.9	8.3	8.3
89266	72.2S	60.3W	91	S	250	204	82	0	3.7	-13.4	13.9
89272	74.8S	71.5W	1369	S	208	208	100	0			
89612	66.3S	110.8E	390	S	23	23	100	0			
89661	73.1S	169.6E	200	S	74	6	8	0	2.7	9.0	9.4
89666	76.7S	163.0E	200	S	56	56	100	0			
89744	74.0S	43.0E	3353	S	270	0	0	0	0.7	7.7	7.7
89769	78.5S	168.4E	50	S	368	367	100	0			
89847	67.6S	146.0E	30	S	295	2	1	0	1.4	-9.5	9.6

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in $m\ s^{-1}$
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 $m\ s^{-1}$ Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAA	37	0	49	1.5	0.9	38	0	50	0	11.4	-1.4
AAH	839	0	37	1.4	0.4	830	0	37	0	6.5	0.6
AAL	6144	0	18	1.4	0.1	6107	0	19	0	7.5	0.8
AAR	1469	0	6	1.7	-0.4	1484	0	6	0	7.9	0.3
ACA	1765	0	2	1.5	0.1	1783	0	2	0	6.4	0.6
ACI	28	11	64	1.9	0.7	28	0	64	0	10.6	4.9
AEA	818	1	4	1.8	0.5	799	0	4	0	8.8	0.4
AEL	508	5	14	2.5	0.4	515	0	9	0	8.5	0.8
AEY	77	0	1	2.3	1.6	77	0	3	0	11.2	1.0
AFL	421	0	2	1.5	0.3	422	1	3	0	6.2	0.8
AFR	1863	1	7	1.6	0.0	1879	0	6	0	7.1	0.7
AIH	210	1	4	1.2	0.0	212	0	3	0	7.5	0.6
AJM	177	0	1	1.5	0.1	179	1	4	0	8.1	0.5
AMM	105	3	7	1.8	1.0	107	1	6	0	8.9	1.9
AMT	709	0	42	2.1	1.4	706	0	43	0	7.8	0.8
AMX	264	3	9	2.0	0.6	266	0	7	0	11.2	1.7
ANA	983	0	16	1.6	0.7	987	0	17	0	7.4	0.5
ANZ	6128	0	37	1.4	0.2	6088	0	37	0	7.2	0.8
AOM	947	1	8	1.7	0.7	945	1	9	0	7.7	0.6
ARG	101	2	26	2.9	1.1	102	0	83	0	13.0	1.2
AUU	655	0	13	1.0	0.6	654	0	13	0	4.8	0.7
AVA	600	1	5	1.8	0.4	601	0	6	0	9.0	0.6
AVE	28	0	7	1.2	0.5	27	0	7	0	8.5	0.1
AVN	155	0	50	1.7	-0.1	157	0	49	0	6.3	-0.6
AXF	49	0	24	1.1	0.1	49	0	27	0	7.3	-0.5
AZA	671	4	39	3.0	1.2	685	0	7	0	8.4	0.5
BAL	267	0	6	1.2	0.1	270	1	9	0	8.0	0.5
BAW	1522	0	9	1.7	0.2	1498	0	9	0	8.1	1.0
BLX	51	0	8	1.2	-0.2	52	0	13	0	13.3	0.1
BWA	298	0	8	2.5	1.6	292	1	9	0	10.5	0.2
CAL	268	1	4	1.6	0.3	275	0	6	0	8.3	0.5
CCA	275	1	78	2.8	0.9	290	1	100	0	12.7	0.5
CDN	1451	0	16	1.5	0.1	1435	0	16	0	8.1	0.3
CES	506	0	5	1.6	0.3	524	1	7	0	9.0	0.8
CFG	997	1	3	1.4	-0.6	994	0	4	0	8.0	0.4
CLX	404	1	5	1.4	-0.5	405	1	5	0	6.7	0.4
CMI	288	4	8	1.9	0.7	283	0	7	0	10.3	1.3
CMM	536	1	24	1.9	-0.3	530	0	24	0	8.8	1.2
COA	1356	1	28	1.3	0.2	1361	0	28	0	8.9	1.5
CPA	59	2	8	2.6	1.6	67	0	10	0	16.3	1.1
CRL	509	2	12	1.8	0.6	499	1	11	0	8.1	1.2
CSN	109	1	3	1.5	0.0	114	0	8	0	11.5	0.5
CTB	51	2	6	1.1	0.3	51	0	4	0	4.9	0.1
CUB	202	0	4	2.2	1.3	201	0	3	0	8.7	-0.2
DAL	3389	0	32	1.3	0.3	3440	0	33	0	7.0	0.5
DBY	435	0	2	1.2	-0.2	433	0	3	0	7.3	0.9
DLH	1893	0	6	1.5	0.2	1900	0	6	0	6.6	0.7
EDW	68	0	7	1.3	-0.1	67	0	9	0	9.0	1.1
EEZ	88	2	100	2.9	1.6	85	0	12	0	10.9	0.5
EIA	382	1	42	1.5	0.0	378	0	42	0	8.4	1.6
ELY	86	0	6	1.6	-0.2	89	0	7	0	7.3	1.7
ETH	25	0	8	1.7	0.1	24	0	8	0	5.5	0.3
EVA	779	0	5	1.7	-0.2	788	0	6	0	7.8	0.5
EWW	124	0	6	1.4	-0.1	125	0	9	0	10.2	0.6
FDX	2025	0	40	1.4	0.5	2029	0	40	0	7.8	0.7
FIN	418	0	3	1.4	0.3	408	1	4	0	6.5	0.7
FJI	893	1	48	1.6	0.2	876	0	47	0	8.7	0.0
FOM	459	0	30	1.6	0.0	457	0	29	0	6.3	1.1
FWQ	136	0	57	0.9	0.3	136	0	57	0	5.1	0.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GAF	32	0	0	1.6	-0.6	35	0	0	0	4.0	0.3
GCO	232	1	13	1.9	0.4	244	0	100	0	14.7	2.2
GHA	104	0	1	1.6	0.0	103	0	1	0	10.2	2.5
GRL	46	0	0	1.3	0.3	46	0	2	0	6.0	1.0
GTI	324	0	3	1.5	-0.2	341	0	4	0	7.8	0.8
HAL	4054	0	35	1.5	0.4	3990	0	36	0	9.0	1.6
HBI	21	0	29	2.2	1.1	22	0	27	0	6.8	1.0
HLF	166	0	3	1.1	-0.3	164	0	4	0	6.9	0.4
HRH	388	2	63	1.4	0.0	388	0	63	0	7.7	1.5
HVN	45	7	7	1.1	0.4	44	0	0	0	6.4	1.9
IBE	2815	1	8	1.9	0.6	2780	0	9	0	8.9	0.8
ICE	1142	0	4	1.6	0.3	1062	0	3	0	7.0	0.6
IWD	172	1	2	1.0	-0.4	173	0	5	0	10.0	1.0
JAA	64	3	6	1.5	0.4	64	0	3	0	8.5	0.6
JAL	6208	0	5	1.6	0.1	6206	0	5	0	7.7	0.8
JAZ	935	0	3	2.0	1.2	936	0	4	0	8.0	0.7
JKK	274	0	4	1.4	0.2	249	0	6	0	9.3	0.9
JMC	261	1	7	1.6	1.1	252	0	10	0	10.9	0.8
KAL	3499	0	10	1.7	-0.1	3489	0	11	0	8.3	0.6
KLM	2266	0	9	1.4	0.4	2265	0	10	0	7.5	0.7
LAN	129	3	9	2.6	0.4	135	0	100	0	11.8	2.5
LAP	46	2	22	2.4	1.6	47	0	19	0	10.5	2.9
LDA	125	0	5	1.6	-0.1	129	1	4	0	5.5	0.8
LDI	524	0	100	1.3	-0.2	527	1	6	0	8.8	0.0
LIB	233	1	4	1.9	1.0	230	0	3	0	7.2	0.9
LOT	233	0	4	1.5	-0.7	226	0	5	0	6.2	0.3
LPR	27	0	4	3.5	1.4	28	0	0	0	8.7	-0.2
LTU	542	0	4	1.5	-0.1	539	0	4	0	7.0	1.0
MAS	562	0	2	1.4	0.4	565	1	8	0	11.1	0.6
MON	37	3	5	1.5	0.2	36	0	3	0	7.2	1.2
MPD	290	1	3	1.6	0.0	286	0	5	0	8.3	0.5
MPH	861	0	4	1.6	-0.6	860	0	5	0	8.4	0.6
NCA	690	0	3	1.5	0.3	690	0	5	0	8.3	0.6
NVR	43	0	2	2.1	0.1	43	0	2	0	6.0	1.8
NWA	9976	0	10	1.6	0.5	9919	0	10	0	7.6	0.7
OAE	22	0	36	0.9	0.4	22	0	36	0	5.7	1.7
OAL	28	0	0	1.1	0.0	28	0	0	0	7.2	2.5
PAC	418	0	27	1.5	0.2	444	0	28	0	8.7	0.5
PAL	1390	0	9	1.6	0.0	1311	0	11	0	8.4	1.2
PAO	526	0	55	1.2	0.1	521	0	55	0	7.9	0.9
PUA	28	0	29	3.0	0.9	29	3	34	0	15.7	-0.3
QFA	4782	0	56	1.4	0.4	4771	0	56	0	7.0	0.5
RAF	32	0	0	1.8	1.4	32	0	0	0	8.2	1.7
RAM	83	2	13	1.7	-0.7	82	6	17	0	13.2	-0.7
RCH	292	3	17	2.2	0.6	270	0	17	0	10.2	1.4
RJA	26	0	0	0.9	-0.1	28	0	0	0	5.0	1.7
RKA	104	1	9	2.4	-0.2	104	1	8	0	9.8	0.7
RRR	72	1	8	1.8	-0.6	72	0	7	0	6.8	1.5
RYN	301	0	41	1.7	1.0	301	0	41	0	7.6	0.9
RZO	204	2	12	1.9	-0.3	200	0	12	0	10.6	1.0
SAA	378	1	5	1.6	-0.5	374	0	7	0	9.5	0.3
SAS	84	0	21	1.4	-0.3	83	0	20	0	6.2	0.3
SCX	28	14	54	0.9	0.2	26	0	46	0	6.6	-1.1
SIA	622	1	5	1.6	0.2	615	0	5	0	6.5	0.7
SLR	248	1	7	1.2	-0.1	252	0	6	0	7.0	0.9
SOL	27	0	0	1.2	0.6	28	0	0	0	6.4	1.3
SOO	21	0	90	1.8	-0.2	34	0	3	0	5.8	-0.1
SVA	71	0	3	1.5	-0.1	78	0	3	0	6.4	1.4
SWR	65	0	9	1.1	0.4	68	0	10	0	10.8	1.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TAM	27	4	15	1.3	0.6	27	0	22	0	10.4	-0.9
TAP	525	2	9	1.5	-0.1	524	1	10	0	9.3	1.3
TBA	25	4	36	2.3	1.4	29	0	38	0	10.2	1.9
TCU	37	0	0	1.3	0.6	37	0	0	0	5.8	1.5
THA	199	1	4	1.7	0.0	200	4	17	0	14.2	0.5
THT	76	0	36	2.0	0.0	75	0	35	0	8.3	2.4
TLX	26	0	4	1.8	0.2	26	0	0	0	5.3	0.3
TPA	27	0	0	1.3	0.8	26	0	4	0	12.9	1.1
TSC	97	0	28	1.7	-0.1	95	0	27	0	6.3	0.4
TWA	1982	0	20	1.6	0.3	1949	0	20	0	7.3	0.9
UAL	130977	0	100	1.1	-0.2	130748	0	100	0	5.2	0.5
UPS	1736	0	48	1.7	0.2	1740	0	47	0	6.8	0.6
USA	353	2	3	1.2	0.1	312	0	4	0	8.8	1.3
VIR	600	0	2	1.4	0.0	599	0	3	0	7.7	0.8
VKG	100	0	3	1.7	-0.1	98	0	4	0	10.2	2.0
VPB	53	6	13	1.6	0.0	56	2	13	0	8.5	1.7
VRG	323	2	28	2.3	1.1	359	1	100	0	12.0	1.3
VVR	71	0	34	3.6	0.6	84	0	29	0	6.8	0.7
WOA	219	0	5	1.5	0.7	236	1	8	0	7.1	1.3
YSS	43	0	2	1.2	0.7	43	0	7	0	10.2	-0.9
AN	6179	0	19	1.1	0.2	6179	0	19	0	5.4	0.6
AR	3563	3	100	2.9	2.6	3548	0	9	0	7.7	1.7
AU	39587	0	14	1.2	0.5	39583	0	14	0	5.7	0.5
EU	101344	0	25	1.2	0.2	101344	0	25	0	5.0	0.6
KL	8266	0	15	1.2	0.7	8240	0	15	0	5.1	0.9
LH	2296	0	7	1.5	1.0	2270	0	7	0	4.7	1.1
LN	23	0	39	2.1	1.5	23	0	39	0	8.8	3.2
MK	3676	0	6	1.5	1.1	3661	0	6	0	6.7	1.2
NZ	3491	0	12	1.2	-0.1	3491	0	13	0	5.3	0.7
QF	6923	0	11	1.2	0.6	6923	0	11	0	5.9	0.7
SA	5065	0	10	1.4	0.7	5064	0	10	0	6.6	0.9
SV	1194	0	100	2.7	2.5	1177	0	4	0	6.6	0.5
WA	409	8	15	1.7	0.5	400	10	22	0	12.1	-1.1
XX	5299	2	10	1.5	0.2	5217	0	11	0	10.5	0.7
N	741	2	21	2.2	0.7	780	0	19	0	7.5	0.9
ACARS	813448	1	55	1.3	0.3	813443	0	54	0	5.4	0.8

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

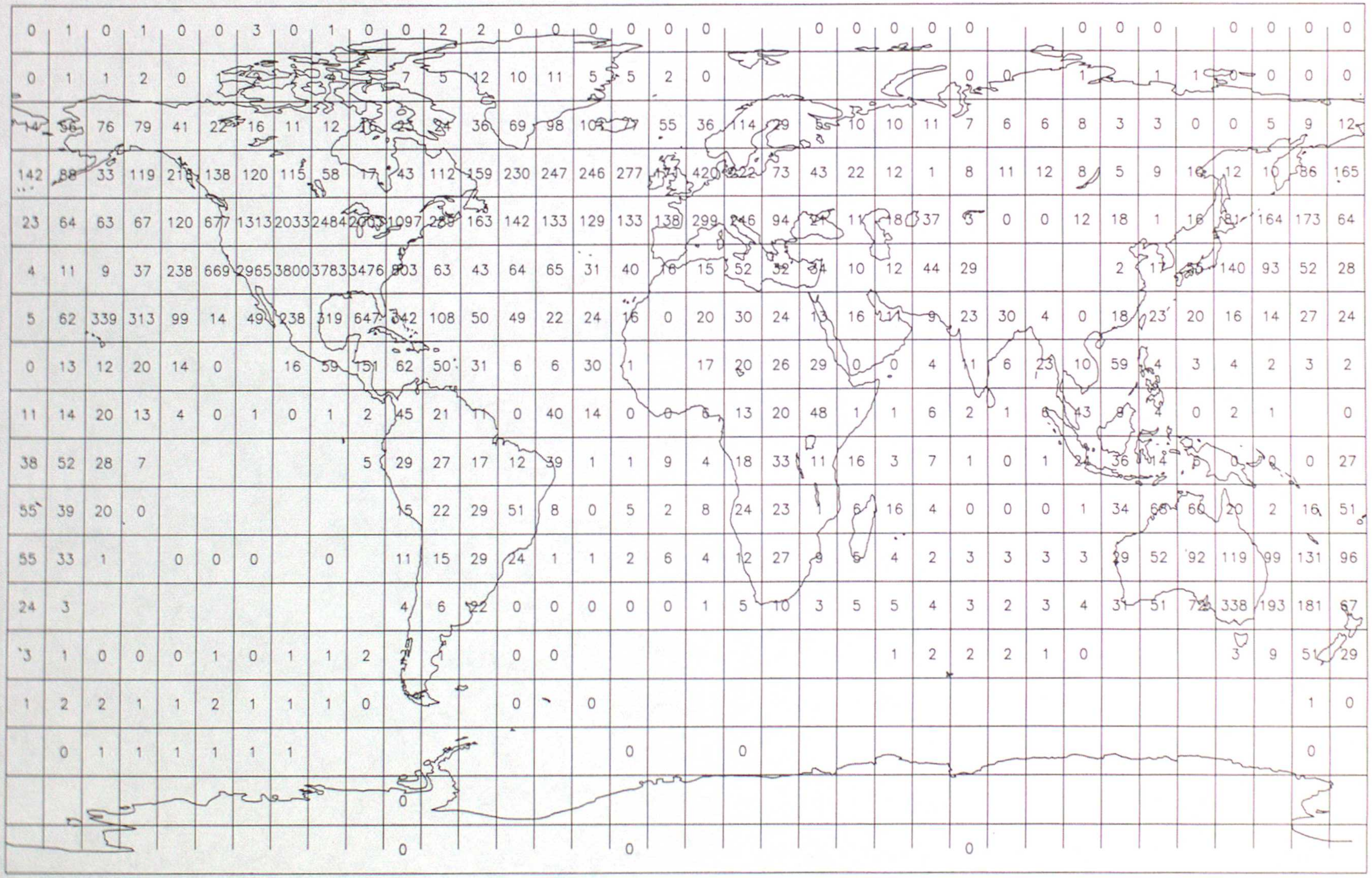
NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	20	5	40	3.6	-1.5	20	0	20	0	7.8	2.9
AAL	457	1	10	1.6	-0.1	439	1	11	0	9.4	0.9
AAR	82	0	24	1.9	-0.8	85	0	24	0	9.9	1.1
ACI	30	0	60	1.1	0.0	30	0	60	0	6.7	1.2
AFL	25	0	4	2.8	1.7	26	0	0	0	5.7	-0.3
AFR	85	1	9	1.7	-0.2	92	0	10	0	7.9	0.7
ANZ	273	3	39	1.2	0.1	282	0	40	0	9.1	1.1
AOM	53	2	6	1.5	1.0	51	0	6	0	8.5	0.3
ARG	28	7	14	3.3	0.9	29	0	76	0	9.9	3.3
AUU	461	0	56	0.9	0.3	461	0	56	0	3.7	0.7
AXF	52	0	33	0.9	0.5	52	0	33	0	5.8	1.1
BAF	27	4	7	0.9	0.2	27	0	7	0	6.4	0.7
CFC	137	1	9	1.6	0.8	142	0	10	0	6.8	1.1
CFG	32	0	3	1.7	-0.4	32	0	0	0	6.1	0.1
CLX	20	0	5	1.3	-0.6	20	0	5	0	5.9	-0.1
CMI	47	0	9	3.0	-1.0	47	0	4	0	10.7	6.2
COA	144	0	29	1.1	0.2	144	0	31	0	9.2	1.1
CUB	40	3	3	2.0	1.6	41	0	2	0	6.3	-0.4
DAL	145	1	31	1.5	0.7	148	0	31	0	5.7	-0.1
DHL	80	3	69	6.5	-5.5	79	0	25	0	15.6	1.9
DLH	296	0	11	1.4	0.3	303	0	11	0	6.5	0.7
EVA	126	0	30	1.3	-0.7	124	0	31	0	6.2	1.4
EWW	83	0	6	2.0	0.6	82	1	15	0	11.5	0.6
FDX	486	1	34	1.5	0.8	485	0	34	0	6.3	1.0
GAF	29	3	3	1.2	0.6	29	0	0	0	4.7	0.3
GCO	298	0	4	1.5	0.2	306	0	100	0	17.0	3.4
GHA	40	5	8	2.2	0.1	37	0	5	0	9.4	0.3
HAL	130	0	41	1.6	0.5	129	0	40	0	7.0	1.7
IAF	33	3	27	3.5	1.2	34	3	21	0	13.3	4.0
IBE	101	1	23	1.5	0.2	100	0	24	0	9.0	1.1
ICE	51	0	6	0.9	-0.3	51	0	8	0	6.6	1.9
JAL	139	2	17	1.6	0.0	140	0	14	0	8.5	2.1
JAZ	142	1	5	1.8	1.2	144	0	5	0	8.3	-0.2
JMC	31	0	23	1.4	1.0	31	0	23	0	5.8	0.0
KAL	65	3	25	2.1	-0.4	65	0	20	0	6.0	0.8
KIW	66	0	17	3.0	2.1	56	0	18	0	10.8	-0.1
KLM	65	0	3	1.4	0.5	65	0	3	0	7.4	1.3
LAN	94	5	12	3.3	-0.3	102	0	100	0	10.2	3.4
LIB	22	5	5	1.5	1.1	21	0	5	0	7.6	2.0
MAS	59	3	31	1.9	0.4	59	0	36	0	11.9	0.4
MPH	45	0	0	1.5	-0.4	45	0	2	0	10.3	2.1
NCA	133	0	2	1.6	0.1	131	0	5	0	7.8	0.5
NRN	23	0	4	3.5	-1.7	24	0	4	0	12.1	-0.2
NWA	247	0	15	1.8	0.7	244	0	16	0	8.3	-0.2
PAC	33	0	12	1.0	0.0	33	0	15	0	11.3	0.3
PAL	36	0	6	0.9	-0.2	35	0	6	0	5.0	1.3
QFA	229	4	41	1.2	0.4	229	0	40	0	7.7	0.6
RCH	207	3	14	2.1	0.3	203	0	17	0	12.7	2.4
RRR	189	2	10	3.2	2.2	188	1	10	0	10.7	1.0
SAA	49	2	2	1.3	-1.0	48	0	2	0	6.1	-0.7
SIA	57	0	2	1.0	0.1	57	0	2	0	5.1	0.8
SWR	57	0	12	2.2	1.3	58	0	29	0	17.3	2.5
UAL	203041	0	100	1.2	-0.1	202574	0	100	0	4.6	0.3
UPS	151	0	29	1.8	0.7	154	0	31	0	8.0	-0.2
VHJ	119	2	3	1.6	-0.3	118	0	2	0	8.4	0.4
VRG	22	0	27	2.6	0.0	25	0	100	0	7.3	0.7
VVP	55	11	64	5.2	2.2	52	0	50	0	14.3	4.3
WOA	27	0	26	2.0	0.2	34	0	29	0	8.0	1.3

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AN	20295	0	69	1.3	-0.1	20295	0	69	0	4.0	0.4
AR	2861	1	100	2.0	1.4	2836	0	55	0	4.8	0.7
AU	75923	0	66	1.4	0.1	75921	0	66	0	4.1	0.5
EU	561042	0	77	1.0	0.2	559665	0	77	0	4.2	0.0
KL	5786	0	59	1.2	0.5	5748	0	59	0	4.2	0.3
LH	787	0	63	1.2	0.5	781	0	63	0	4.3	0.7
MK	3156	0	51	1.4	0.5	3128	0	51	0	4.9	0.8
NZ	8764	0	55	1.4	0.1	8764	0	56	0	5.1	0.7
QF	5183	0	56	1.1	0.4	5183	0	56	0	4.2	0.2
SA	5037	0	59	1.5	0.2	5024	0	59	0	5.6	0.7
SV	2187	0	100	3.1	2.8	2176	0	47	0	6.6	1.6
WA	62	18	26	1.4	0.3	62	5	40	0	19.1	-7.1
XX	1437	4	10	1.8	0.2	1420	0	12	0	12.8	1.3
N	20	30	40	1.9	-0.1	21	5	24	0	14.7	-0.3
ACARS	1155723	0	70	1.3	0.3	1153161	0	71	0	4.7	0.2

MEAN DAILY COUNT OF AIRCRAFT 300 – 150 HPA
NOVEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 41064

FIGURE 3A



0	1	0	1	0	0	3	0	1	0	0	2	2	0	0	0	0	0	0			0	0	0	0	0			0	0	0		0	0	0	0
0	1	1	2	0	1			4	1	7	5	12	10	11	5	5	2	0							0	0		1		1	1	0	0	0	0
14	56	76	79	41	22	16	11	12	16	23	24	36	69	98	103	77	55	36	114	29	55	10	10	11	7	6	6	8	3	3	0	0	5	9	12
142	88	33	119	218	138	120	115	58	17	43	112	159	230	247	246	277	171	420	322	73	43	22	12	1	8	11	12	8	5	9	16	12	10	86	165
23	64	63	67	120	677	1313	2033	2484	2003	1097	289	163	142	133	129	133	138	299	246	94	21	11	18	37	3	0	0	12	18	1	16	81	164	173	64
4	11	9	37	238	669	2965	3800	3783	3476	803	63	43	64	65	31	40	16	15	52	32	34	10	12	44	29				2	17	55	140	93	52	28
5	62	339	313	99	14	49	238	319	647	342	108	50	49	22	24	16	0	20	30	24	13	16	11	9	23	30	4	0	18	23	20	16	14	27	24
0	13	12	20	14	0		16	59	151	62	50	31	6	6	30	1		17	20	26	29	0	0	4	11	6	23	10	59	4	3	4	2	3	2
11	14	20	13	4	0	1	0	1	2	45	21	11	0	40	14	0	0	6	13	20	48	1	1	6	2	1	6	43	8	4	0	2	1		0
38	52	28	7						5	29	27	17	12	39	1	1	9	4	18	33	11	16	3	7	1	0	1	24	36	14	5	0	0	0	27
55	39	20	0							15	22	29	51	8	0	5	2	8	24	23	1	6	16	4	0	0	0	1	34	68	60	20	2	16	51
55	33	1		0	0	0		0		11	15	29	24	1	1	2	6	4	12	27	9	5	4	2	3	3	3	3	29	52	92	119	99	131	96
24	3									4	6	22	0	0	0	0	0	1	5	10	3	5	5	4	3	2	3	4	31	51	72	338	193	181	67
3	1	0	0	0	1	0	1	1	2	2	1		0	0									1	2	2	2	1	0				3	9	51	29
1	2	2	1	1	2	1	1	1	0				0		0																			1	0
	0	1	1	1	1	1	1									0			0															0	
										0																									
										0						0									0										

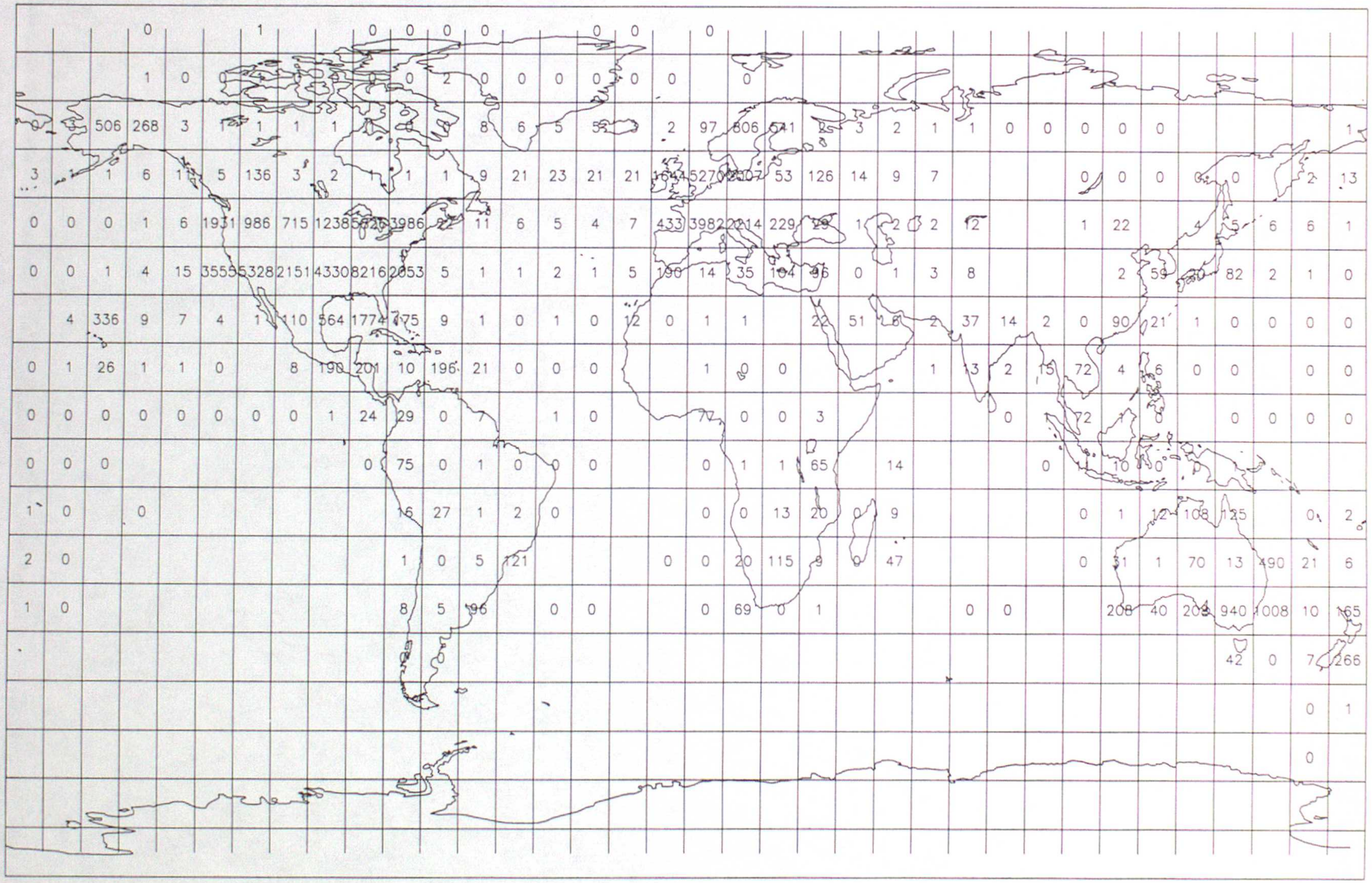
MEAN DAILY COUNT OF AIRCRAFT 1000 – 301 HPA

FIGURE 3B

NOVEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 68445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3 1 1 6 11 5 136 3 2 1 1 1 9 21 23 21 21 1644 5270 2207 53 126 14 9 7 0 0 0 0 0 2 13
0 0 0 1 6 1931 986 715 12385 5826 3986 22 11 6 5 4 7 433 3982 2214 229 29 1 2 2 12 1 22 4 5 6 6 1
0 0 1 4 15 3555 5328 2151 4330 8216 2053 5 1 1 2 1 5 190 14 35 104 96 0 1 3 8 2 59 30 82 2 1 0
4 336 9 7 4 1 110 564 1774 475 9 1 0 1 0 12 0 1 1 22 51 18 2 37 14 2 0 90 21 1 0 0 0 0
0 1 26 1 1 0 8 190 201 10 196 21 0 0 0 1 0 0 1 13 2 15 72 4 6 0 0 0 0
0 0 0 0 0 0 0 0 1 24 29 0 7 1 0 77 0 0 3 0 1 72 1 0 0 0 0 0
0 0 0 0 75 0 1 0 0 0 0 1 1 65 14 0 1 10 0
1 0 0 16 27 1 2 0 0 0 13 20 0 9 0 1 12 108 125 0 2
2 0 1 0 5 121 0 0 20 115 9 0 47 0 31 1 70 13 490 21 6
1 0 8 5 96 0 0 0 69 0 1 0 0 208 40 208 940 1008 10 165
42 0 7 266
0 1
0

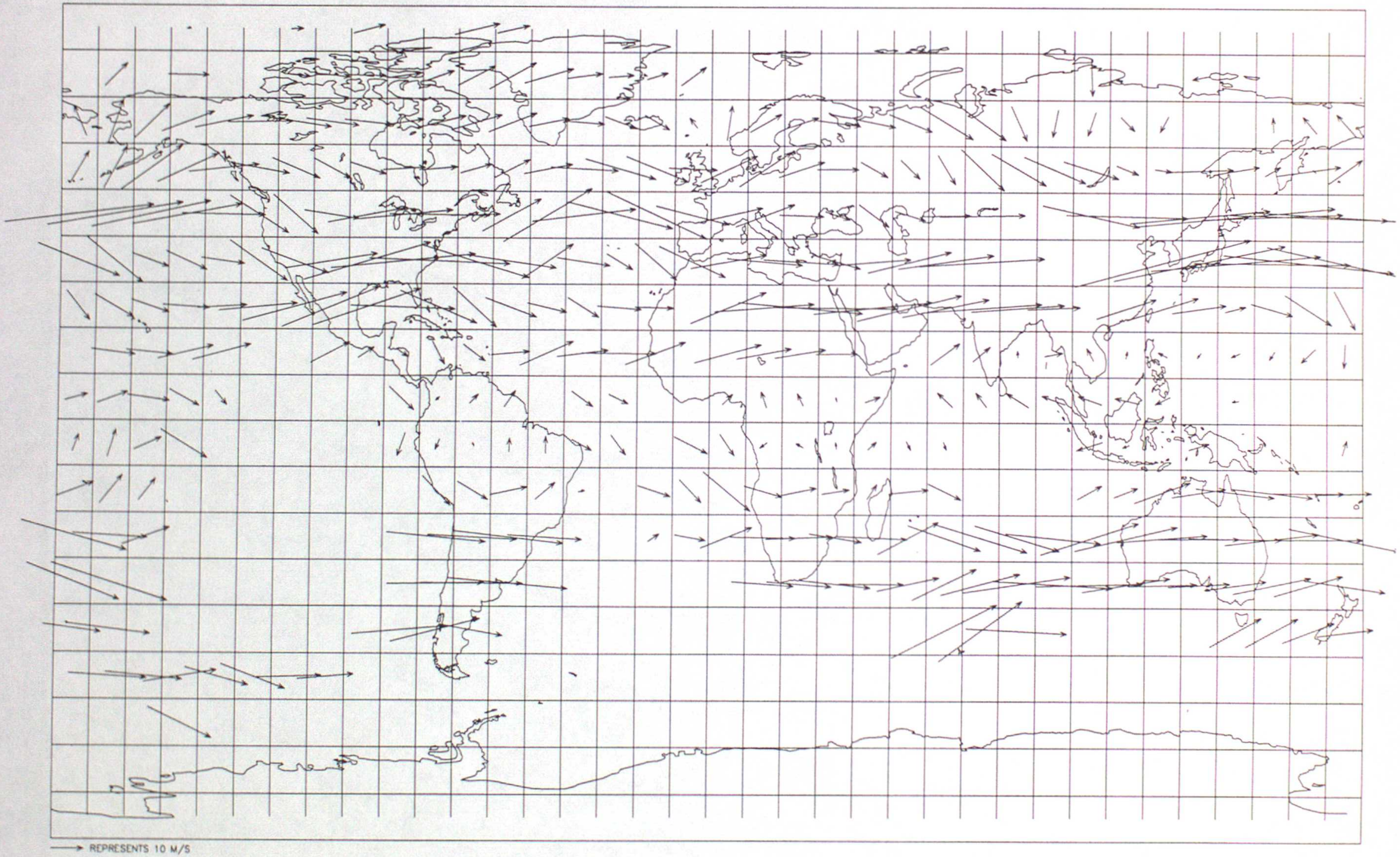
AIRCRAFT MEAN WINDS BETWEEN 300 AND 150 HPA

NOVEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

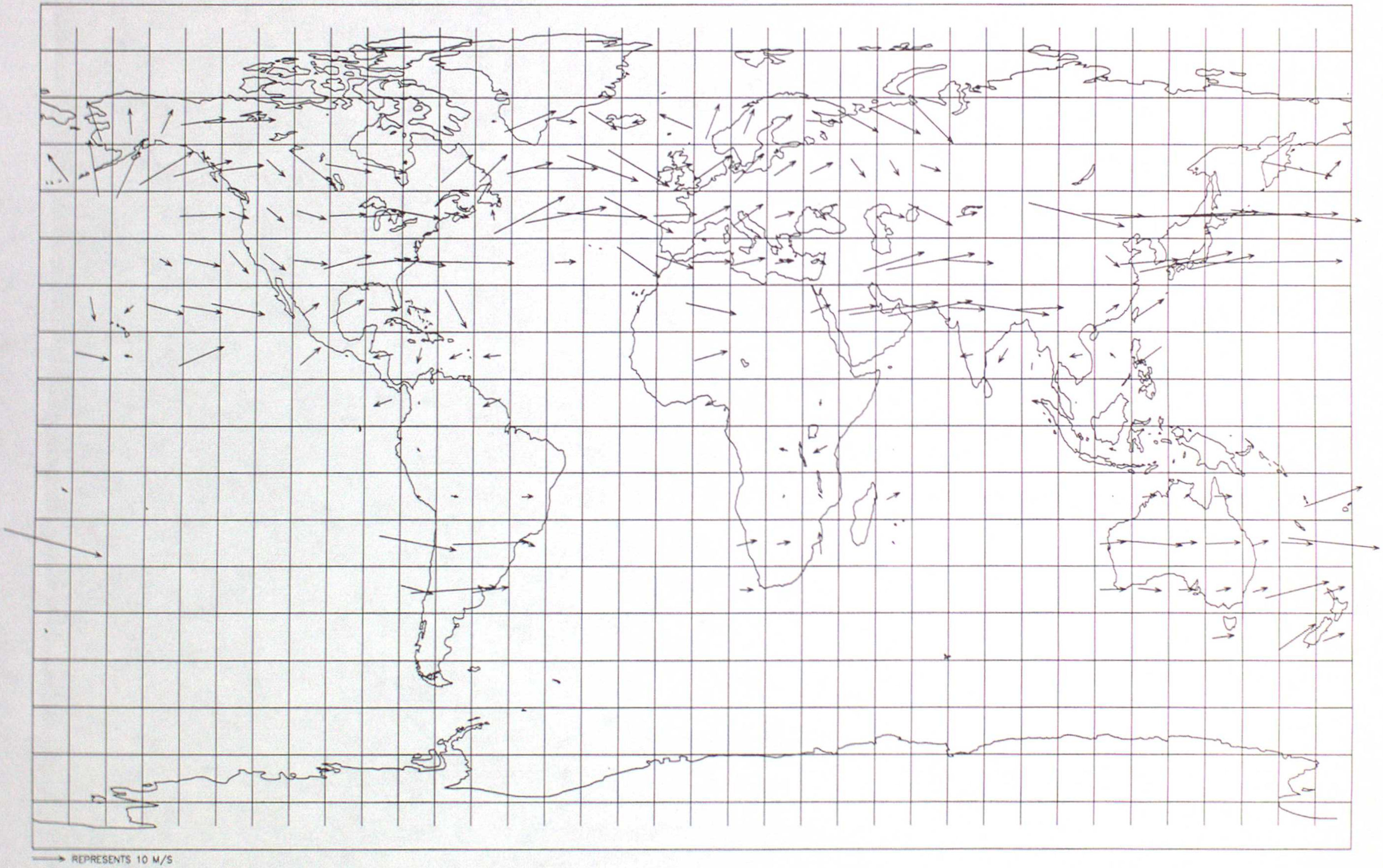
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4A

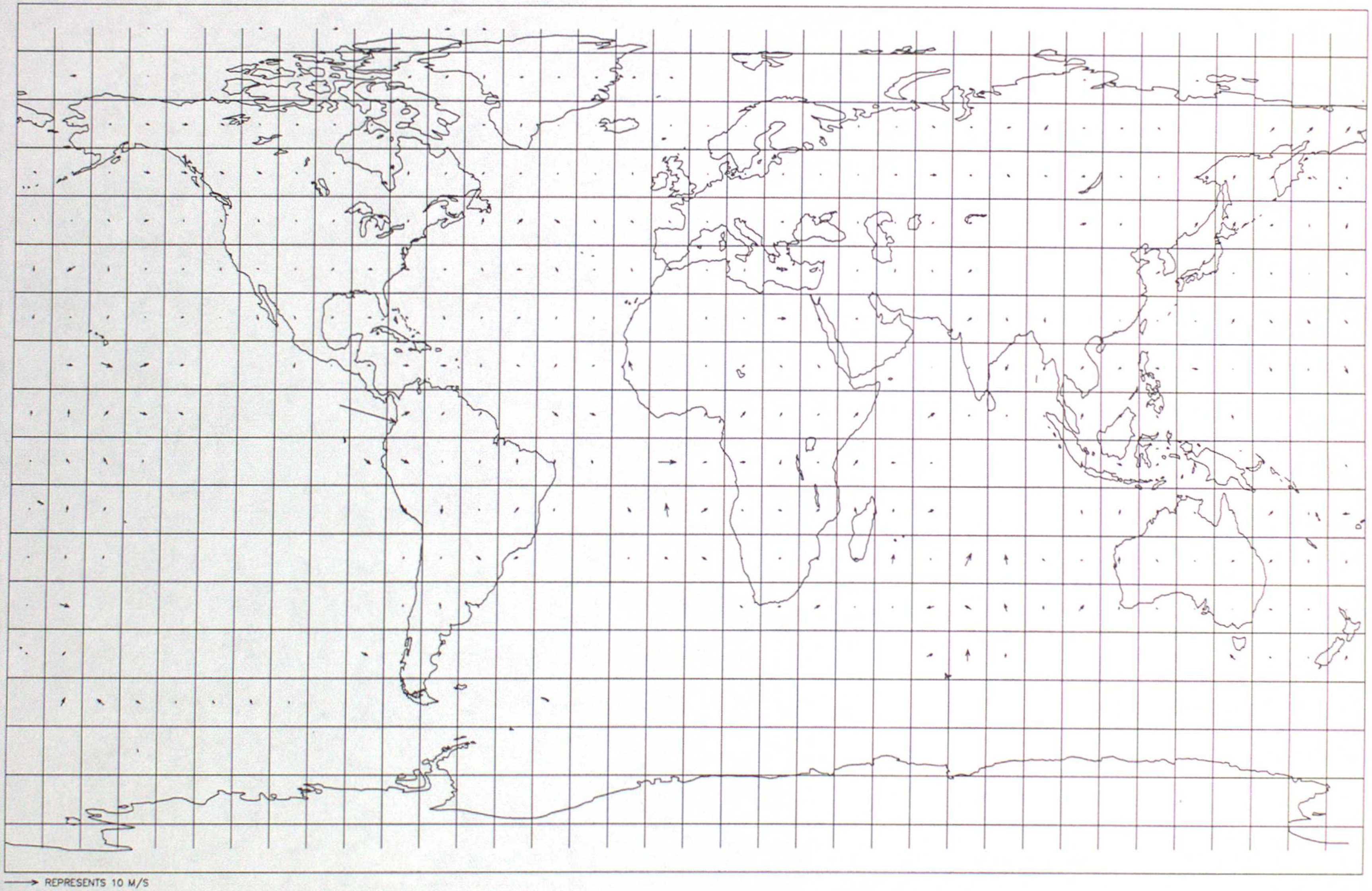


AIRCRAFT MEAN WINDS BETWEEN 1000 AND 301 HPA
NOVEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT

FIGURE 4B



AIRCRAFT MEAN O–B WINDS BETWEEN 300 AND 150 HPA FIGURE 5A
NOVEMBER 2000
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



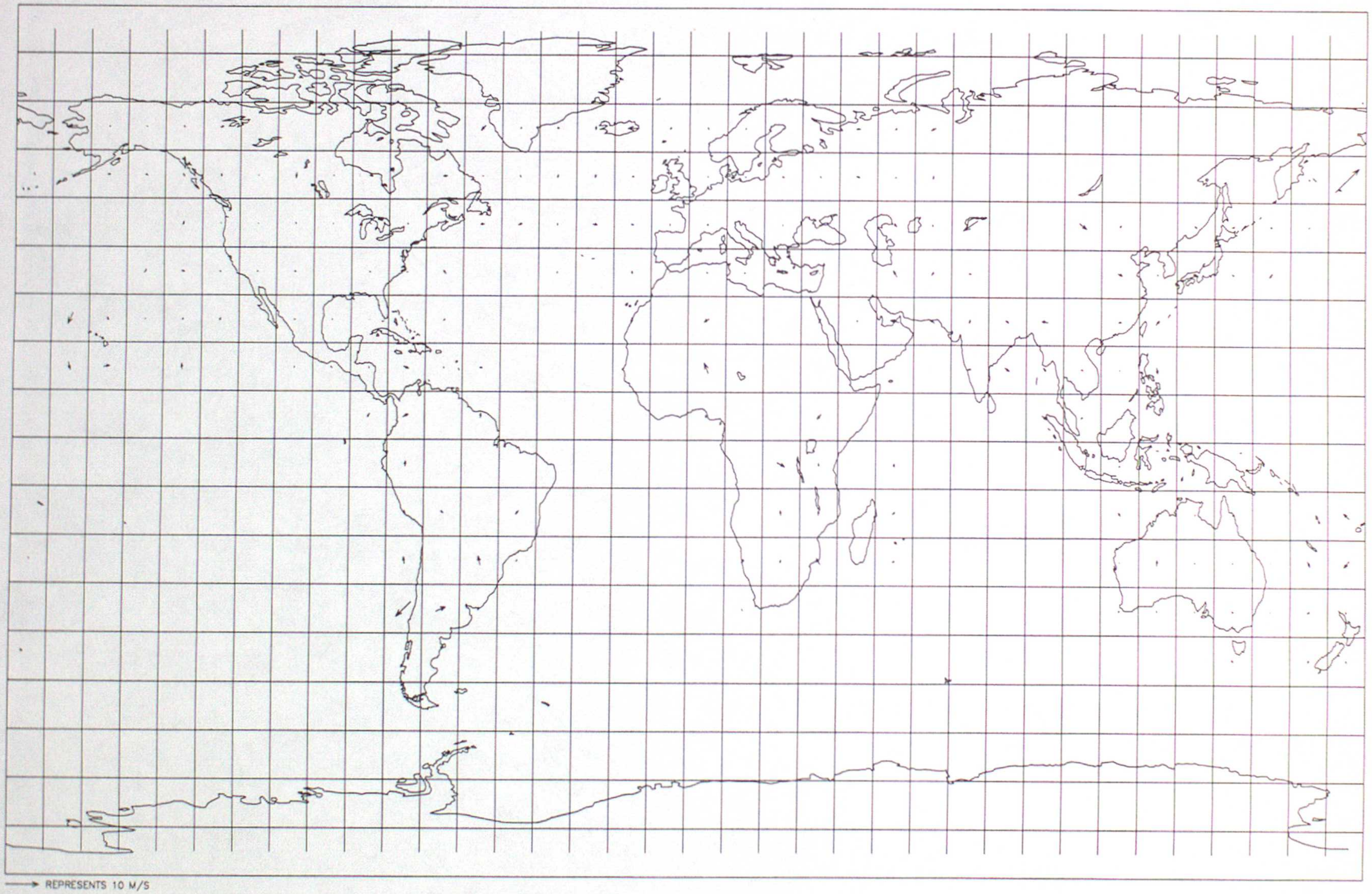
AIRCRAFT MEAN O–B WINDS BETWEEN 1000 AND 301 HPA

FIGURE 5B

NOVEMBER 2000

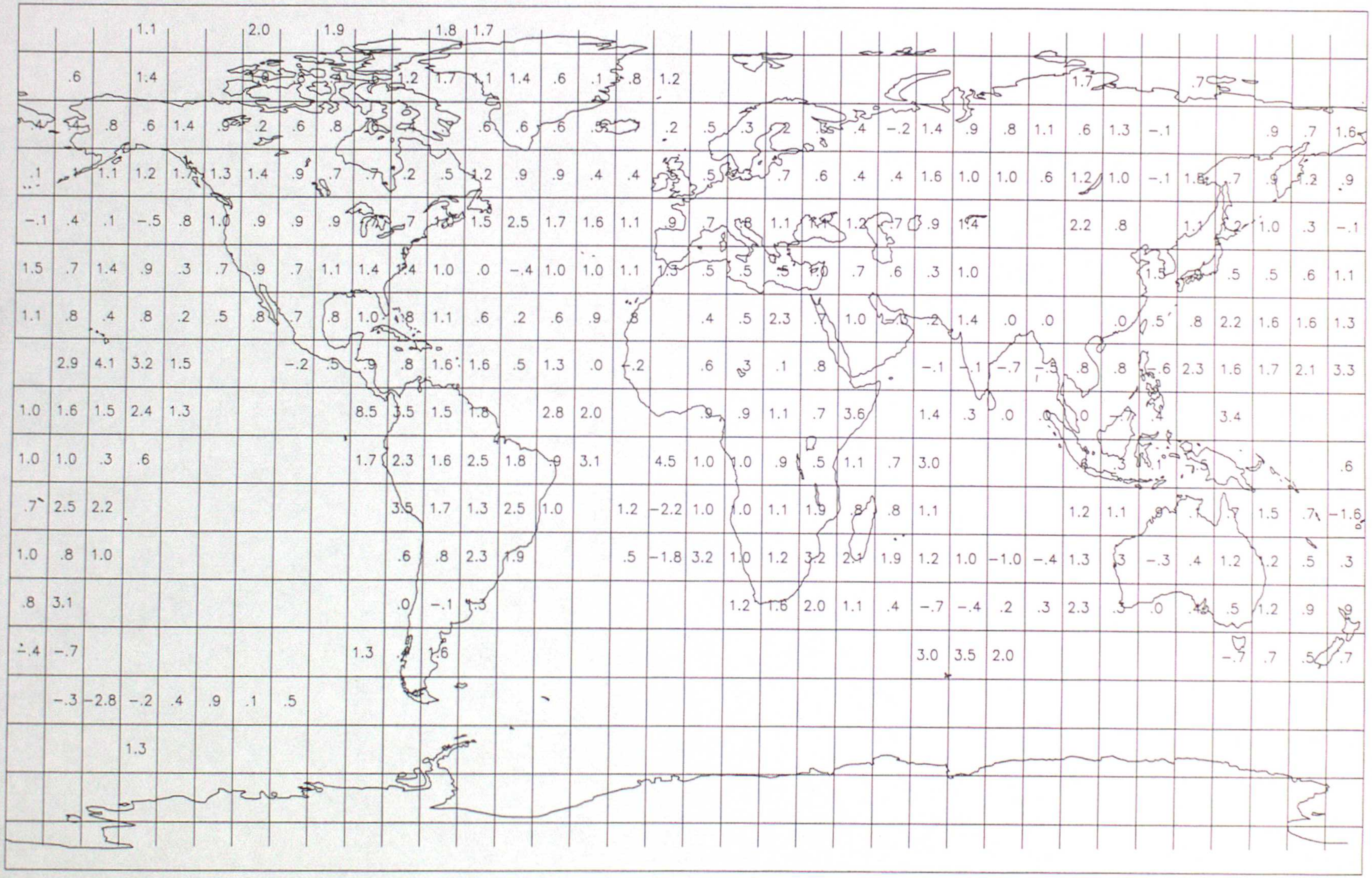
OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE MORE THAN 30 OBS ARE PRESENT



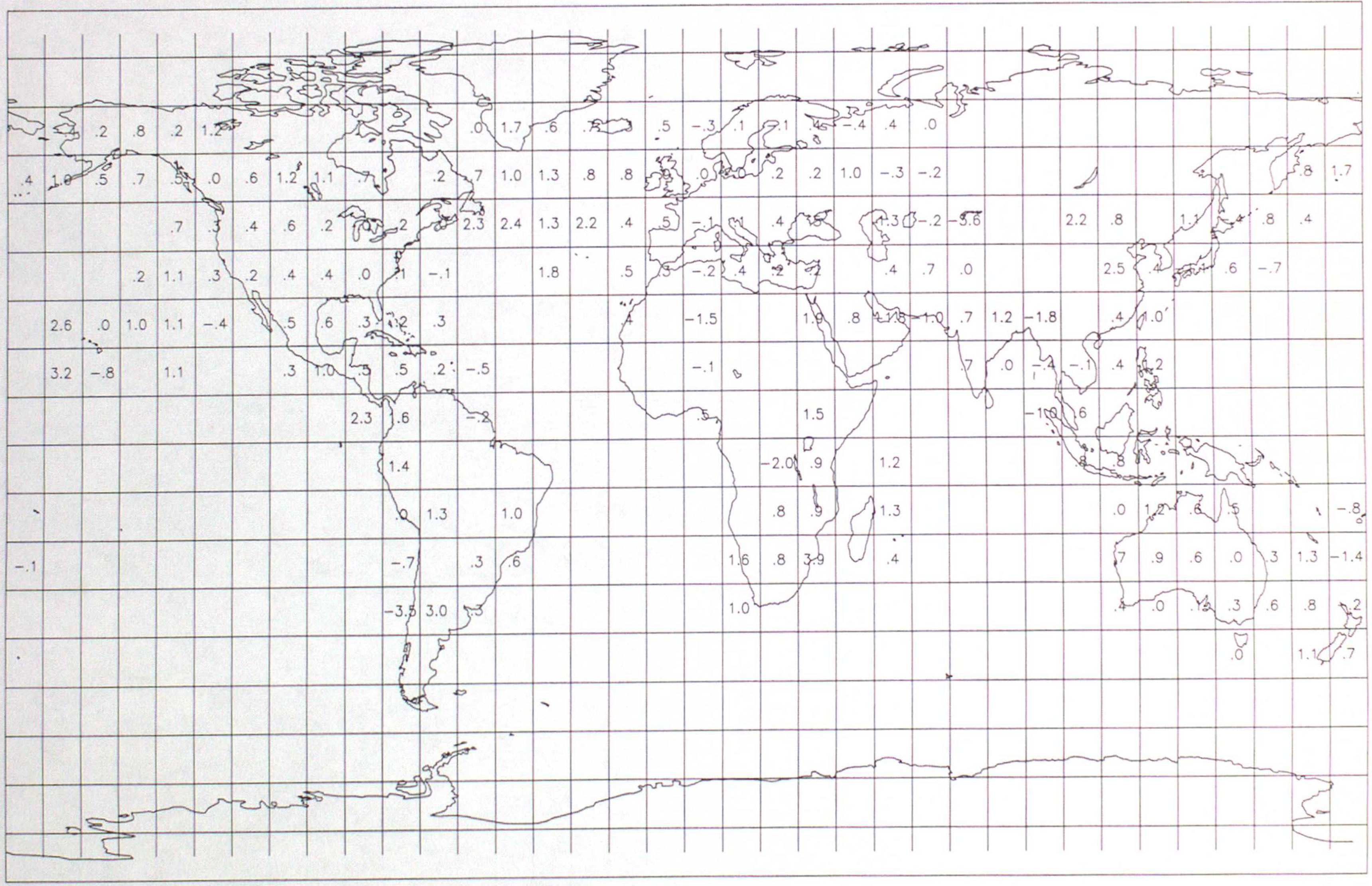
AIRCRAFT : MEAN O-B SPEEDS (M/S) 300 – 150 HPA
NOVEMBER 2000
OBSERVATIONS WITH O-B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6A


1.1 2.0 1.9 1.8 1.7
.6 1.4 1.2 1.7 1.1 1.4 .6 .1 .8 1.2 1.7 .7
.4 .4 .8 .6 1.4 .9 .2 .6 .8 .6 .6 .6 .5 .2 .5 .3 .2 .5 .4 −.2 1.4 .9 .8 1.1 .6 1.3 −.1 .9 .7 1.6
.1 .1 1.1 1.2 1.7 1.3 1.4 .9 .7 .7 .2 .5 1.2 .9 .9 .4 .4 .5 .5 .7 .6 .4 .4 1.6 1.0 1.0 .6 1.2 1.0 −.1 1.8 .7 .9 1.2 .9
−.1 .4 .1 −.5 .8 1.0 .9 .9 .9 .7 1.0 1.5 2.5 1.7 1.6 1.1 .9 .7 .8 1.1 1.1 1.2 .7 .9 1.4 2.2 .8 1.1 .2 1.0 .3 −.1
1.5 .7 1.4 .9 .3 .7 .9 .7 1.1 1.4 1.4 1.0 .0 −.4 1.0 1.0 1.1 1.3 .5 .5 .5 1.0 .7 .6 .3 1.0 1.5 .5 .5 .6 1.1
1.1 .8 .4 .8 .2 .5 .8 .7 .8 1.0 .8 1.1 .6 .2 .6 .9 .8 .4 .5 2.3 .7 1.0 .5 .2 1.4 .0 .0 .0 .5 .8 2.2 1.6 1.6 1.3
2.9 4.1 3.2 1.5 −.2 .5 .9 .8 1.6 1.6 .5 1.3 .0 −.2 .6 .3 .1 .8 −.1 −.1 −.7 −.5 .8 .8 −.6 2.3 1.6 1.7 2.1 3.3
1.0 1.6 1.5 2.4 1.3 8.5 3.5 1.5 1.8 2.8 2.0 .9 .9 1.1 .7 3.6 1.4 .3 .0 .0 .0 −.7 .4 3.4
1.0 1.0 .3 .6 1.7 2.3 1.6 2.5 1.8 .9 3.1 4.5 1.0 1.0 .9 .5 1.1 .7 3.0 .6
.7 2.5 2.2 3.5 1.7 1.3 2.5 1.0 1.2 −2.2 1.0 1.0 1.1 1.9 .8 .8 1.1 1.2 1.1 .9 .1 .7 1.5 .7 −1.6
1.0 .8 1.0 .6 .8 2.3 1.9 .5 −1.8 3.2 1.0 1.2 3.2 2.1 1.9 1.2 1.0 −1.0 −.4 1.3 .3 −.3 .4 1.2 .2 .5 .3
.8 3.1 .0 −.1 .3 1.2 1.6 2.0 1.1 .4 −.7 −.4 .2 .3 2.3 .3 .0 .4 .5 1.2 .9 .9
−.4 −.7 1.3 .4 1.6 3.0 3.5 2.0 −.7 .7 .5 .7
−.3 −2.8 −.2 .4 .9 .1 .5
1.3

AIRCRAFT : MEAN O−B SPEEDS (M/S) 1000 − 301 HPA
NOVEMBER 2000
OBSERVATIONS WITH O−B VECTOR DIFFERENCE > 60 MPS EXCLUDED
VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 6B


.2 .8 .2 1.2 .0 1.7 .6 .7 .5 −.3 .1 .1 .4 −.4 .4 .0
.4 1.0 .5 .7 .5 .0 .6 1.2 1.1 .7 .2 .7 1.0 1.3 .8 .8 .0 .0 .2 .2 1.0 −.3 −.2 .8 1.7
.7 .3 .4 .6 .2 .2 2.3 2.4 1.3 2.2 .4 .5 −.1 .1 .4 .5 1.3 .0 −.2 −3.6 2.2 .8 1.1 .8 .4
.2 1.1 .3 .2 .4 .4 .0 .1 −.1 1.8 .5 .3 −.2 .4 .2 .2 .4 .7 .0 2.5 .4 .1 .6 −.7
2.6 .0 1.0 1.1 −.4 .5 .6 .3 .2 .3 .4 −1.5 1.9 .8 1.5 1.0 .7 1.2 −1.8 .4 1.0
3.2 −.8 1.1 .3 1.0 .5 .5 .2 −.5 −.1 .7 .0 −.4 −.1 .4 .2
2.3 1.6 −.2 .5 1.5 −1.0 .6
1.4 −2.0 .9 1.2 .8 .8
.0 1.3 1.0 .8 .9 1.3 .0 1.2 .6 .5 −.8
−.1 −.7 .3 .6 1.6 .8 3.9 .4 .7 .9 .6 .0 .3 1.3 −1.4
−3.5 3.0 .3 1.0 .4 .0 .1 .3 .6 .8 .2
.0 1.1 .7

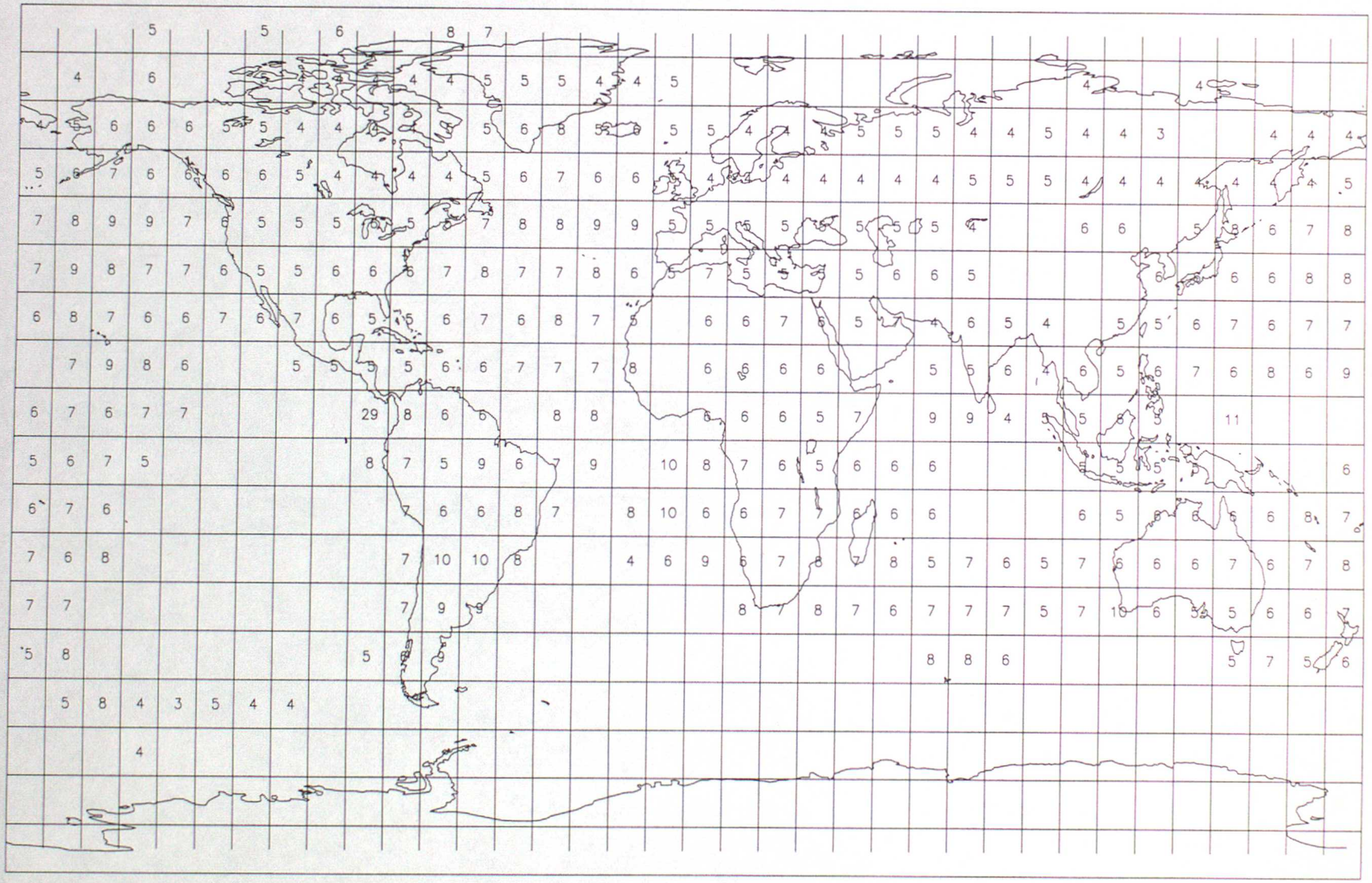
AIRCRAFT : RMS O-B VECTOR (M/S) 300 - 150 HPA

NOVEMBER 2000

OBSERVATIONS WITH O-B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7A


5 5 6 8 7
4 6 4 4 5 5 5 4 4 5 4 4
6 6 6 5 5 4 4 5 6 8 5 6 5 5 4 4 5 5 5 4 4 5 4 4 3 4 4 4
5 6 7 6 6 6 6 5 4 4 4 4 5 6 7 6 6 4 4 4 4 4 4 5 5 5 4 4 4 4 4 4 4 5
7 8 9 9 7 6 5 5 5 5 7 8 8 9 9 5 5 5 5 5 5 5 5 4 6 6 5 8 6 7 8
7 9 8 7 7 6 5 5 6 6 6 7 8 7 7 8 6 5 7 5 5 5 5 6 6 5 6 6 6 8 8
6 8 7 6 6 7 6 7 6 5 5 6 7 6 8 7 5 6 6 7 6 5 4 6 5 4 5 5 6 7 6 7 7
7 9 8 6 5 5 5 5 6 6 7 7 7 8 6 6 6 6 5 5 6 4 6 5 6 7 6 8 6 9
6 7 6 7 7 29 8 6 6 8 8 6 6 6 5 7 9 9 4 5 5 6 5 11
5 6 7 5 8 7 5 9 6 7 9 10 8 7 6 5 6 6 6 5 5 6
6 7 6 7 6 6 8 7 8 10 6 6 7 7 6 6 6 6 6 5 6 6 6 6 8 7
7 6 8 7 10 10 8 4 6 9 6 7 8 7 8 5 7 6 5 7 6 6 6 7 6 7 8
7 7 7 9 9 8 7 8 7 6 7 7 7 5 7 10 6 5 5 6 6 7
5 8 5 8 8 8 6 5 7 5 6
5 8 4 3 5 4 4
4

AIRCRAFT : RMS O–B VECTOR (M/S) 1000 – 301 HPA

NOVEMBER 2000

OBSERVATIONS WITH O–B VECTOR DIFFERENCE GREATER THAN 60 MPS EXCLUDED

VALUES ARE PRINTED WHERE > 30 OBS ARE PRESENT

FIGURE 7B

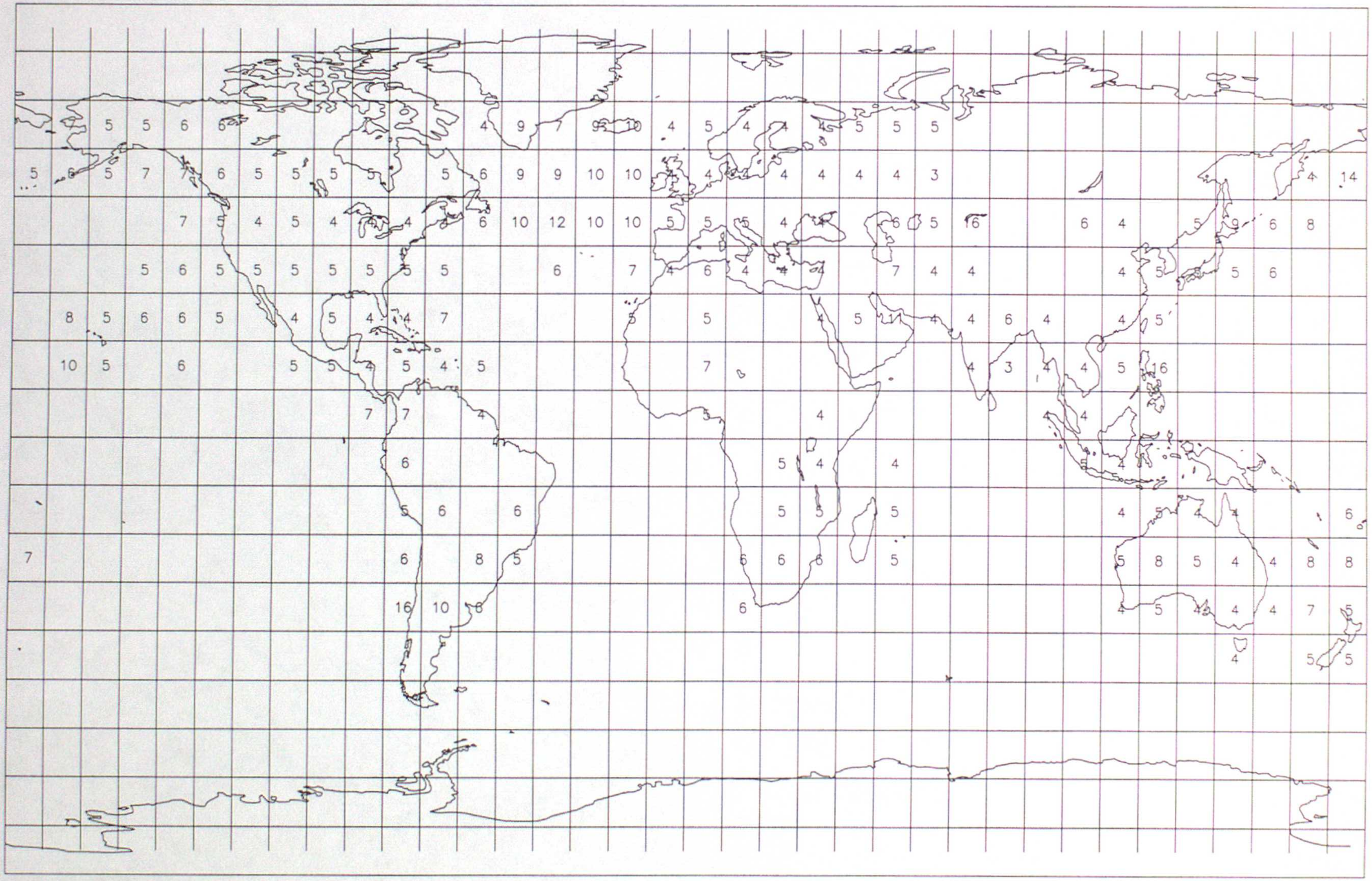

5 5 6 6 4 9 7 9 10 4 5 4 4 4 5 5 5
5 6 5 7 7 6 5 5 5 5 5 6 9 9 10 10 4 4 4 4 4 4 4 3 4 14
7 5 4 5 4 4 4 6 10 12 10 10 5 5 5 4 4 6 5 16 6 4 5 9 6 8
5 6 5 5 5 5 5 5 5 6 7 4 6 4 4 4 7 4 4 4 5 5 5 6
8 5 6 6 5 4 5 4 4 7 5 5 4 5 11 4 4 6 4 4 5
10 5 6 5 5 4 5 4 5 7 4 3 4 4 5 16
7 7 4 5 4 4 4
6 5 4 4 4 4
5 6 6 5 5 5 4 5 4 4 6
7 6 8 5 6 6 6 5 5 8 5 4 4 8 8
16 10 8 6 4 5 4 4 4 7 5
4 5 5

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown duringperiod.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
33345	00	Z	70	50/ 31	23	0	35.4	-143.6	147.9	5
42339	00	Z	250	26/ 73	16	0	95.6	5.8	95.8	5
42369	00	Z	200	27/ 81	17	0	85.1	-37.4	92.9	6
42397	00	Z	150	27/ 88	15	0	69.2	-115.5	134.6	8
42397	12	Z	150	27/ 88	11	3	59.4	-125.4	138.7	8
42647	12	Z	50	23/ 73	10	2	101.2	210.8	233.8	9
42701	12	Z	100	23/ 85	17	0	118.4	-13.0	119.1	5
42724	00	Z	30	24/ 91	18	0	98.8	213.7	235.5	8
42724	12	Z	70	24/ 91	13	1	78.3	-169.2	186.4	7
42809	00	Z	50	23/ 88	19	0	87.7	177.8	198.3	6
42867	00	Z	200	21/ 79	23	0	73.1	-52.7	90.1	6
42971	00	Z	50	20/ 86	28	0	100.6	169.3	196.9	7
43003	12	Z	150	19/ 73	5	9	57.2	227.6	234.7	5
43014	00	Z	200	20/ 75	25	0	95.5	-23.0	98.3	4
43041	12	Z	100	19/ 82	17	0	142.8	-25.1	145.0	6
43128	00	Z	200	17/ 78	25	0	72.1	-44.9	84.9	5
43128	12	Z	50	17/ 78	20	0	92.0	184.9	206.5	5
43279	00	Z	200	13/ 80	29	0	56.3	-68.2	88.4	4
43285	12	Z	50	13/ 75	16	0	76.9	181.9	197.5	4
43295	00	Z	30	13/ 78	16	1	113.4	242.1	267.3	4
43295	12	Z	50	13/ 78	22	0	137.7	109.5	176.0	6
43333	00	Z	50	12/ 93	21	0	103.1	203.6	228.2	5
43346	00	Z	150	11/ 80	28	0	57.3	-74.0	93.6	5
43369	12	Z	50	8/ 73	16	1	92.5	207.6	227.3	8
43371	12	Z	50	8/ 77	20	1	79.2	169.9	187.5	5
47122	00	Z	30	37/ 127	29	0	56.2	208.4	215.8	4
53463	00	Z	250	41/ 112	23	4	56.4	-142.7	153.4	9
53463	12	Z	250	41/ 112	25	2	45.4	-135.6	143.0	8
56739	00	Z	1000	25/ 98	10	19	6.8	89.2	89.5	5
56739	12	Z	1000	25/ 98	30	0	10.8	80.2	80.9	5
56964	00	Z	1000	23/ 101	29	0	13.4	44.2	46.2	4
56964	12	Z	1000	23/ 101	30	0	12.2	33.2	35.4	4
58665	00	Z	70	29/ 121	27	0	52.2	108.9	120.8	4
59981	00	Z	50	17/ 112	16	0	40.0	158.7	163.7	4
72520	00	Z	850	40/ 80	18	12	39.1	-45.9	60.4	11
72520	12	Z	1000	40/ 80	19	9	51.9	-22.6	56.6	10
82193	12	Z	30	-1/ -48	1	0	0.0	264.0	264.0	4
82332	12	Z	50	-3/ -60	8	0	78.9	134.2	155.7	5
82824	12	Z	50	-9/ -64	13	0	55.0	178.0	186.3	4
84628	12	Z	850	-12/ -77	27	0	16.1	-67.3	69.2	7
89009	00	Z	850	-90/ 0	14	13	15.3	77.9	79.3	6
89009	12	Z	1000	-90/ 0	1	26	0.0	88.0	88.0	9
89664	12	Z	250	-78/ 167	25	2	34.4	67.1	75.4	5
91366	00	Z	50	9/ 168	20	6	80.1	291.5	302.3	6

AVAILABILITY – TEMP – 500 HPA GEOPOTENTIAL – NOVEMBER 2000 FIGURE 8
ALL HOURS
10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1143

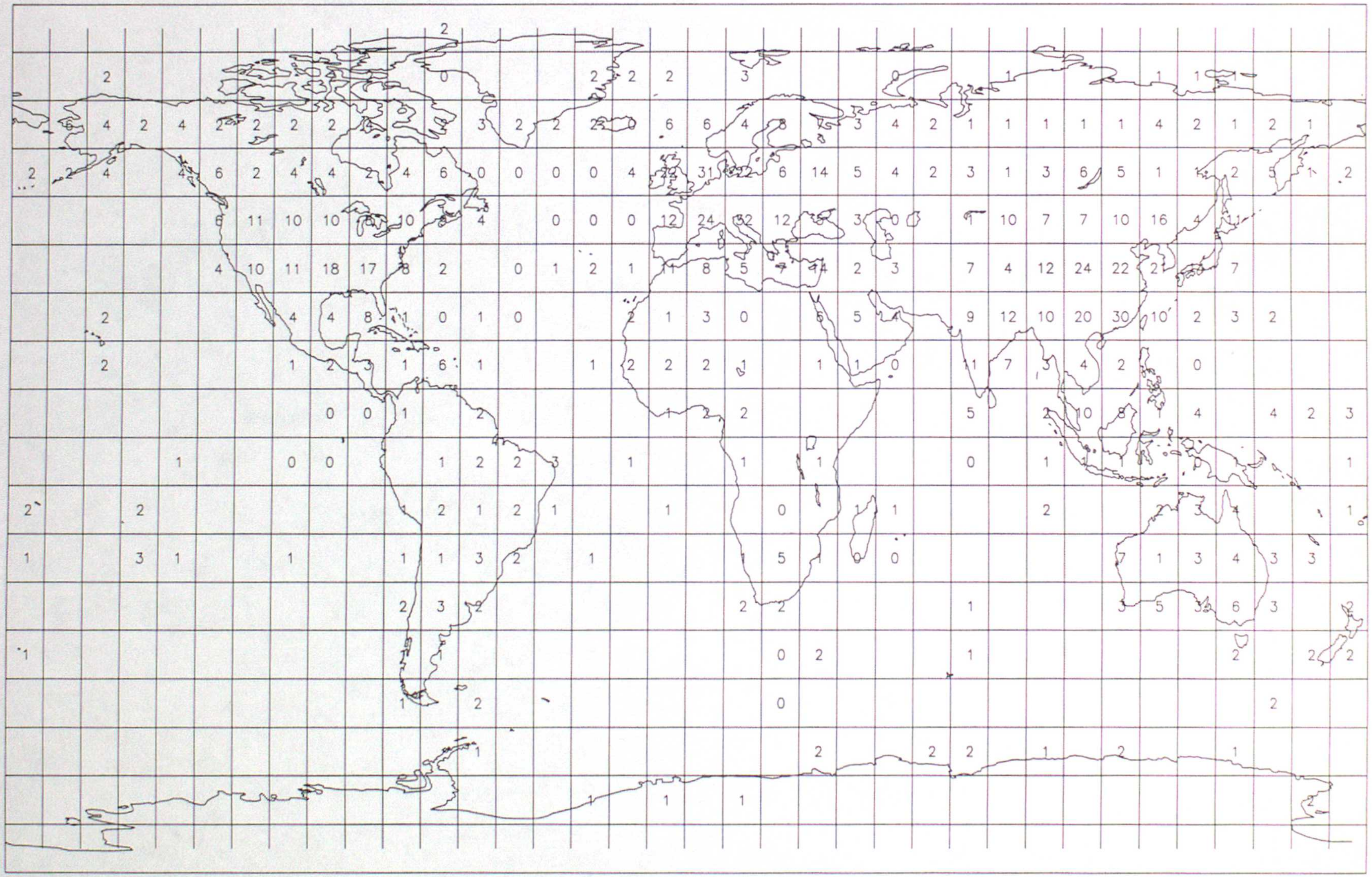

2
2 0 2 2 2 3 0 1 1 1 1
6 4 2 4 2 2 2 2 4 2 3 2 2 23 0 6 6 4 8 5 3 4 2 1 1 1 1 1 4 2 1 2 1
2 2 4 4 6 2 4 4 2 4 6 0 0 0 0 4 22 31 22 6 14 5 4 2 3 1 3 6 5 1 1 2 5 1 2
6 11 10 10 8 10 8 4 0 0 0 12 24 32 12 8 3 0 1 10 7 7 10 16 4 11
4 10 11 18 17 8 2 0 1 2 1 11 8 5 7 14 2 3 7 4 12 24 22 21 7
2 4 4 8 1 0 1 0 2 1 3 0 6 5 4 9 12 10 20 30 10 2 3 2
2 1 2 3 1 6 1 1 2 2 2 1 1 1 0 1 7 3 4 2 0
0 0 1 2 1 2 2 5 2 10 8 1 4 4 2 3
1 0 0 1 2 2 3 1 1 1 0 1 1 1
2 2 1 2 1 2 1 1 0 1 1 2 2 3 4 1 1
1 3 1 1 1 1 3 2 1 1 5 1 0 0 7 1 3 4 3 3
2 3 2 2 2 1 3 5 3 6 3 2
1 1 0 2 1 2 2 2
1 2 0 2
1 2 2 2 1 2 1
1 1 1 2

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	150	-5/ -81	29	0	100	0.0	6.4	28.8	3
PSPIU	12	V	100	-5/ -81	29	0	100	-8.4	-6.6	25.9	3
08023	12	V	400	43/ -4	20	0	10	-1.1	-2.0	15.4	1
40809	12	V	300	33/ 59	10	0	10	-9.4	2.1	17.2	1
42339	00	V	250	26/ 73	16	0	25	-10.3	-9.2	17.2	2
42339	12	V	250	26/ 73	10	0	30	-8.6	-7.0	16.4	1
42369	00	V	200	27/ 81	16	0	12	-14.6	-4.1	17.5	2
42369	12	V	300	27/ 81	10	0	20	-12.0	0.1	16.5	1
42379	00	V	250	27/ 83	21	0	4	-2.0	2.5	15.4	2
42397	12	V	300	27/ 88	19	0	36	-6.7	-3.2	18.5	1
42410	00	V	250	26/ 92	18	0	11	-1.9	3.5	16.2	1
42410	12	V	300	26/ 92	13	0	38	-15.6	6.4	27.1	4
42492	00	V	100	26/ 85	14	0	14	9.3	2.9	19.1	1
42701	12	V	200	23/ 85	14	0	7	-5.2	-1.5	17.0	1
42724	00	V	150	24/ 91	14	0	0	11.9	2.3	18.3	1
42724	12	V	250	24/ 91	13	0	0	-2.4	2.1	15.9	1
53845	12	V	150	37/ 109	28	0	3	-5.9	0.6	17.9	3
56691	00	V	150	27/ 104	24	1	16	7.8	3.9	15.6	2
56691	12	V	250	27/ 104	26	0	26	11.3	6.2	21.3	4
60360	12	V	200	37/ 8	20	0	15	2.1	-3.5	18.7	3
60630	12	V	200	27/ 2	15	0	20	-9.7	-0.2	15.7	1
61641	12	V	100	15/ -17	18	0	5	-4.5	2.9	20.0	1
64458	12	V	150	2/ 16	20	0	10	9.5	0.9	15.5	1
64500	12	V	150	0/ 9	6	1	0	13.1	-2.3	18.2	1
64650	12	V	150	4/ 19	11	0	0	9.7	0.6	15.6	1
68512	12	V	200	-30/ 18	20	0	15	-5.8	1.9	16.0	1
68994	12	V	150	-47/ 38	23	0	4	-0.5	1.3	16.9	1
72520	00	V	250	40/ 80	27	0	100	5.3	0.3	24.8	6
72520	12	V	250	40/ 80	27	0	100	8.6	3.0	28.0	6
76692	12	V	150	19/ -96	10	0	10	-0.6	-6.1	15.7	1
78397	12	V	200	18/ -77	10	0	10	-1.7	4.6	20.5	1
78486	12	V	150	18/ -70	10	0	100	-4.2	-0.9	17.5	1
83612	00	V	200	-20/ -55	20	0	85	-1.9	-3.7	16.7	1
83612	12	V	150	-20/ -55	15	0	73	-2.6	-5.7	15.9	2
83650	12	V	200	-20/ -29	22	0	4	1.2	-1.1	17.0	1

AVAILABILITY – TEMP/PILOT – 300 HPA WIND – NOVEMBER 2000

FIGURE 9

ALL HOURS

10 DEGREE BOX AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS – 1374

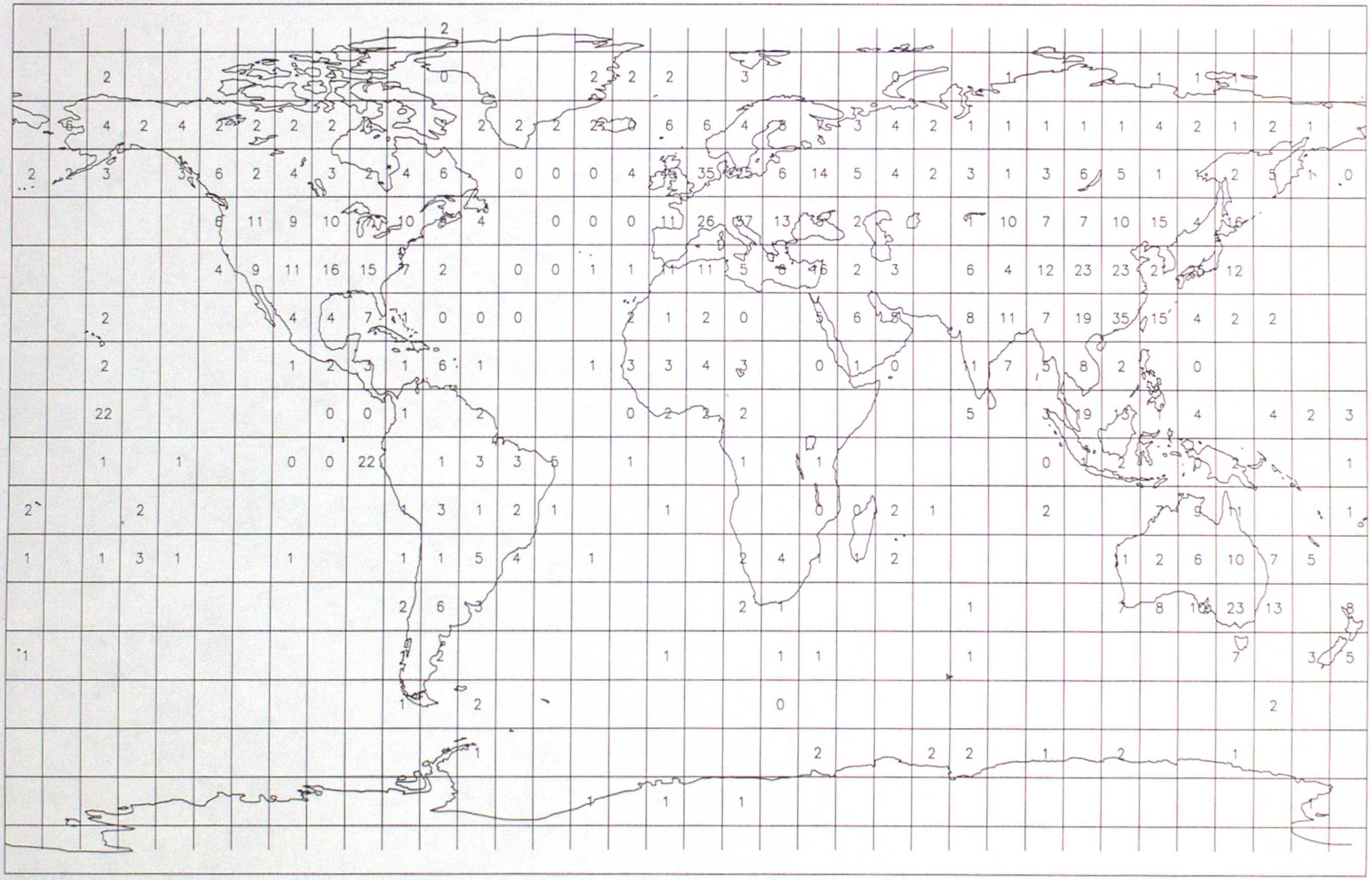

2
2 0 2 2 2 3 0 1 1 1
6 4 2 4 2 2 2 2 2 2 2 2 23 0 6 6 4 8 3 4 2 1 1 1 1 1 4 2 1 2 1
2 2 3 3 6 2 4 3 2 4 6 0 0 0 4 3 35 25 6 14 5 4 2 3 1 3 6 5 1 1 2 5 1 0
6 11 9 10 10 4 0 0 0 11 26 37 13 15 2 1 10 7 7 10 15 4 6
4 9 11 16 15 7 2 0 0 1 1 11 11 5 8 16 2 3 6 4 12 23 23 21 12
2 4 4 7 1 0 0 0 2 1 2 0 5 6 5 8 11 7 19 35 15 4 2 2
2 1 2 3 1 6 1 1 3 3 4 3 0 1 0 1 7 5 8 2 0
22 0 0 1 2 0 2 2 2 5 3 19 15 1 4 4 2 3
1 1 0 0 22 1 3 3 5 1 1 1 0 1 2 2 1
2 2 1 3 1 2 1 1 0 0 2 1 2 7 9 1 1 1
1 1 3 1 1 1 1 5 4 1 2 4 1 1 2 1 2 6 10 7 5
2 6 3 2 1 1 7 8 10 23 13 8
1 2 1 1 1 1 7 3 5
1 2 0 2
1 2 2 2 1 2 1
1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
08594	12	DD	17/ -23	20	-10.8	8.8	14.2
17280	12	DD	38/ 40	5	-10.2	9.2	14.6
29612	12	DD	55/ 78	24	21.4	3.7	9.1
31369	00	DD	53/ 141	11	-10.6	7.2	16.4
42339	00	DD	26/ 73	14	17.4	2.8	8.2
42339	12	DD	26/ 73	10	15.4	5.5	10.3
42397	12	DD	27/ 88	16	11.6	9.7	14.8
43041	00	DD	19/ 82	11	11.8	7.2	19.4
43369	12	DD	8/ 73	17	16.3	6.0	25.7
59134	12	DD	24/ 118	29	10.6	9.2	10.5
60360	12	DD	37/ 8	19	13.0	7.2	22.2
62337	00	DD	31/ 34	27	-19.7	4.3	8.4
62337	12	DD	31/ 34	27	-20.7	5.9	7.8
78486	12	DD	18/ -70	10	10.5	8.3	21.2
78866	12	DD	18/ -63	22	-11.2	6.9	17.8

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

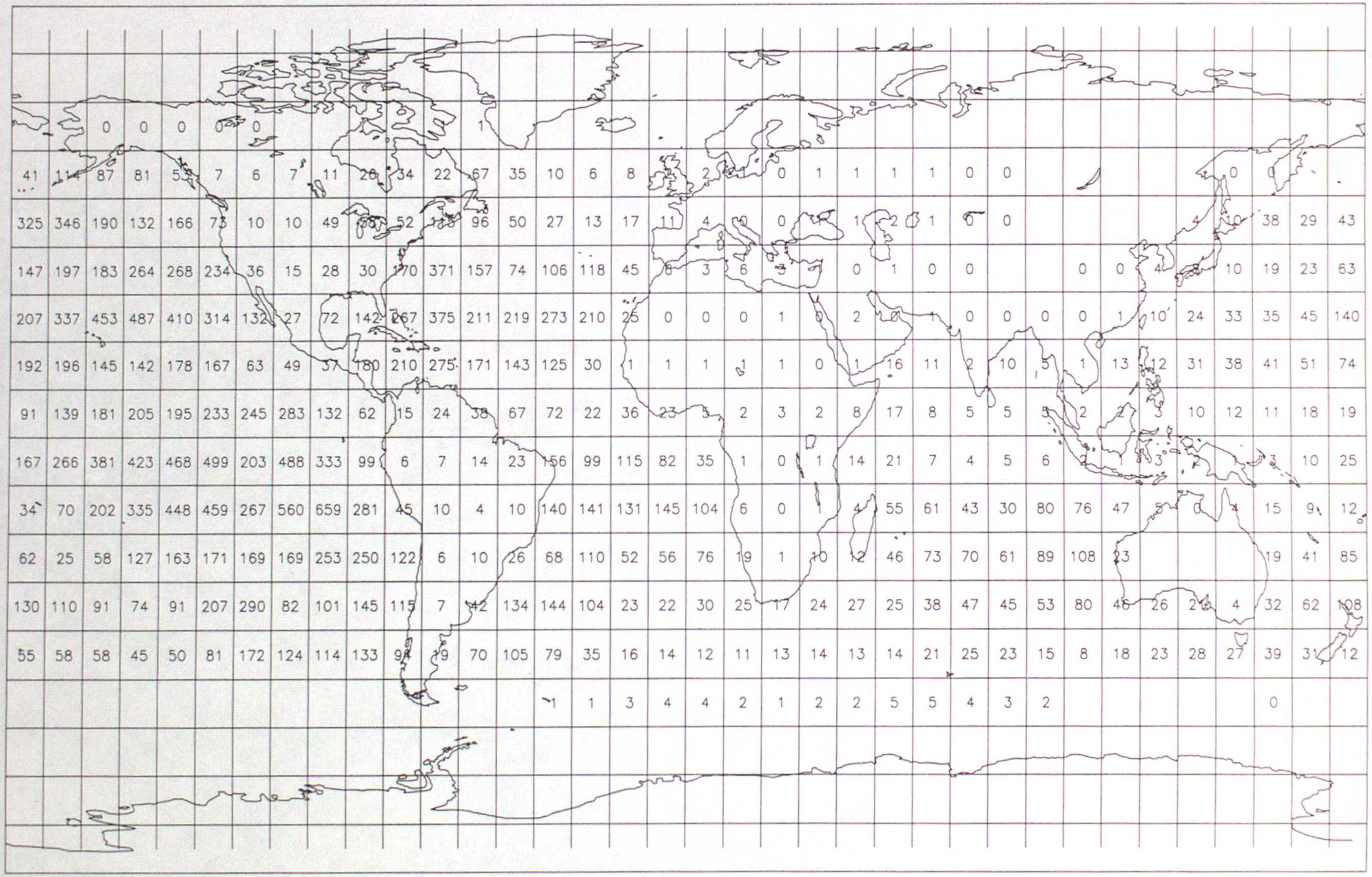
MONTH: NOVEMBER 2000

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 701 AND 1000 HPA FIGURE 10
NOVEMBER 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS =   29779



		0	0	0	0	0						1																							
41	114	87	81	53	7	6	7	11	26	34	22	67	35	10	6	8	2	2	1	0	1	1	1	1	0	0						0	0		
325	346	190	132	166	73	10	10	49	58	52	138	96	50	27	13	17	11	4	0	0	1	1	2	1	0	0					4	10	38	29	43
147	197	183	264	268	234	36	15	28	30	170	371	157	74	106	118	45	8	3	6	3	1	0	1	0	0			0	0	4	8	10	19	23	63
207	337	453	487	410	314	132	27	72	142	267	375	211	219	273	210	25	0	0	0	1	0	2	0	1	0	0	0	0	1	10	24	33	35	45	140
192	196	145	142	178	167	63	49	37	180	210	275	171	143	125	30	1	1	1	1	1	0	1	16	11	2	10	5	1	13	12	31	38	41	51	74
91	139	181	205	195	233	245	283	132	62	15	24	38	67	72	22	36	23	5	2	3	2	8	17	8	5	5	5	2	2	3	10	12	11	18	19
167	266	381	423	468	499	203	488	333	99	6	7	14	23	156	99	115	82	35	1	0	1	14	21	7	4	5	6	2	1	3	2	1	3	10	25
34	70	202	335	448	459	267	560	659	281	45	10	4	10	140	141	131	145	104	6	0	1	4	55	61	43	30	80	76	47	5	0	4	15	9	12
62	25	58	127	163	171	169	169	253	250	122	6	10	26	68	110	52	56	76	19	1	10	12	46	73	70	61	89	108	23				19	41	85
130	110	91	74	91	207	290	82	101	145	115	7	42	134	144	104	23	22	30	25	17	24	27	25	38	47	45	53	80	46	26	26	4	32	62	108
55	58	58	45	50	81	172	124	114	133	94	19	70	105	79	35	16	14	12	11	13	14	13	14	21	25	23	15	8	18	23	28	27	39	31	12
														1	1	3	4	4	2	1	2	2	5	5	4	3	2						0		

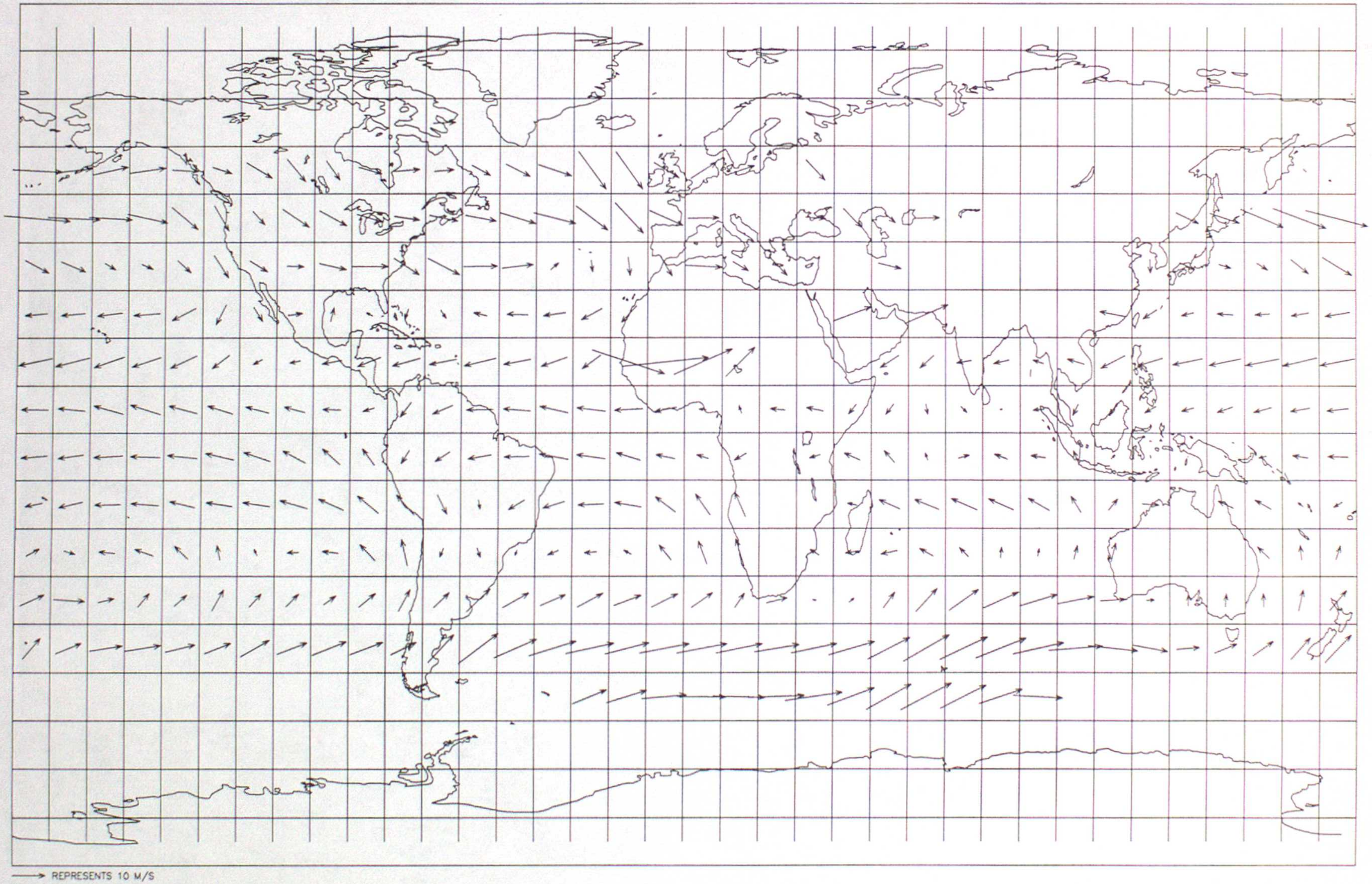
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 701–1000 HPA

FIGURE 11

NOVEMBER 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT


REPRESENTS 10 M/S

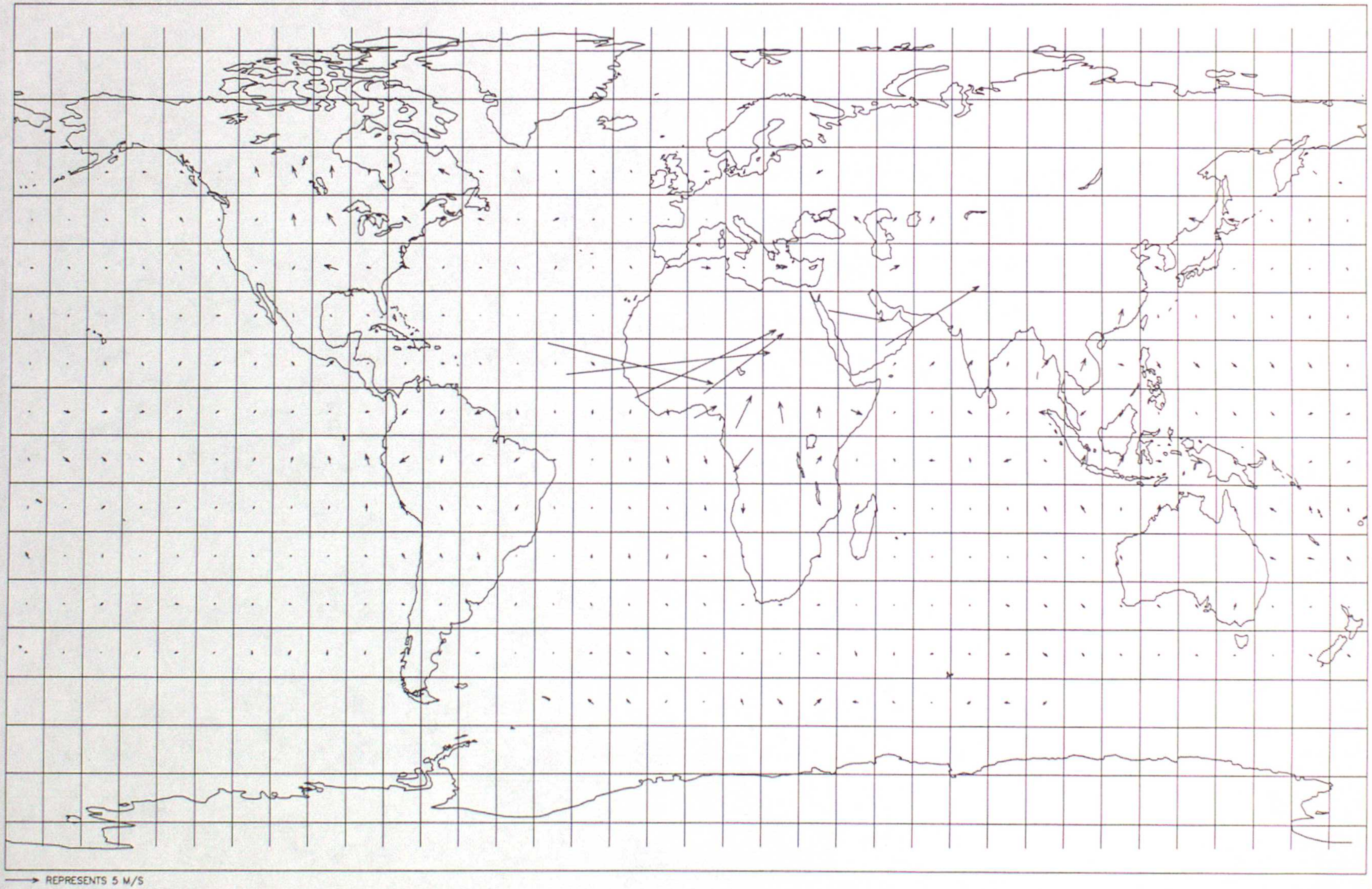
SATOB O−B VECTOR WIND DIFFERENCES BETWEEN 701−1000 HPA

FIGURE 12

NOVEMBER 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

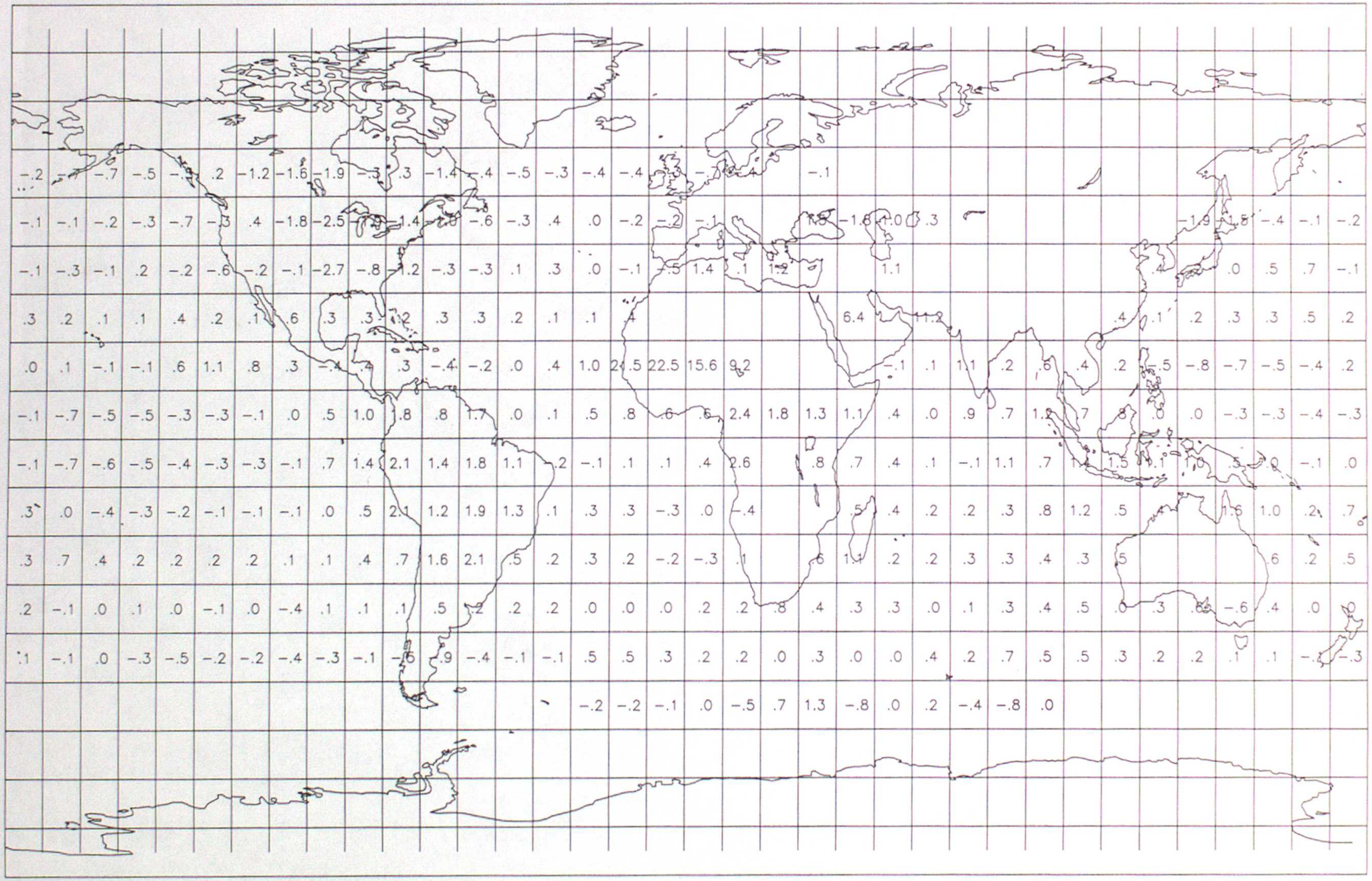


SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 13

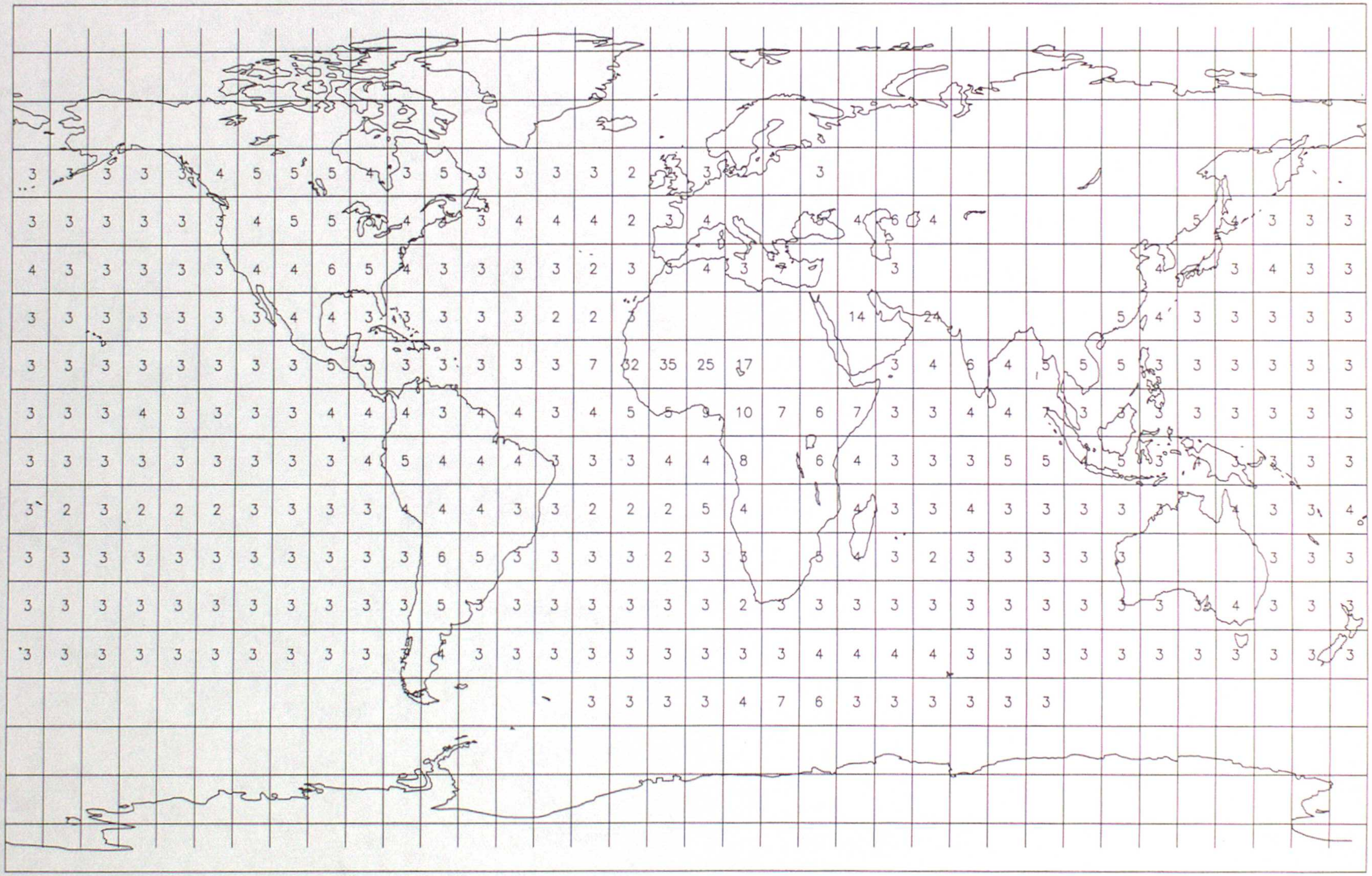
NOVEMBER 2000

USING ALL OBSERVATIONS

VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

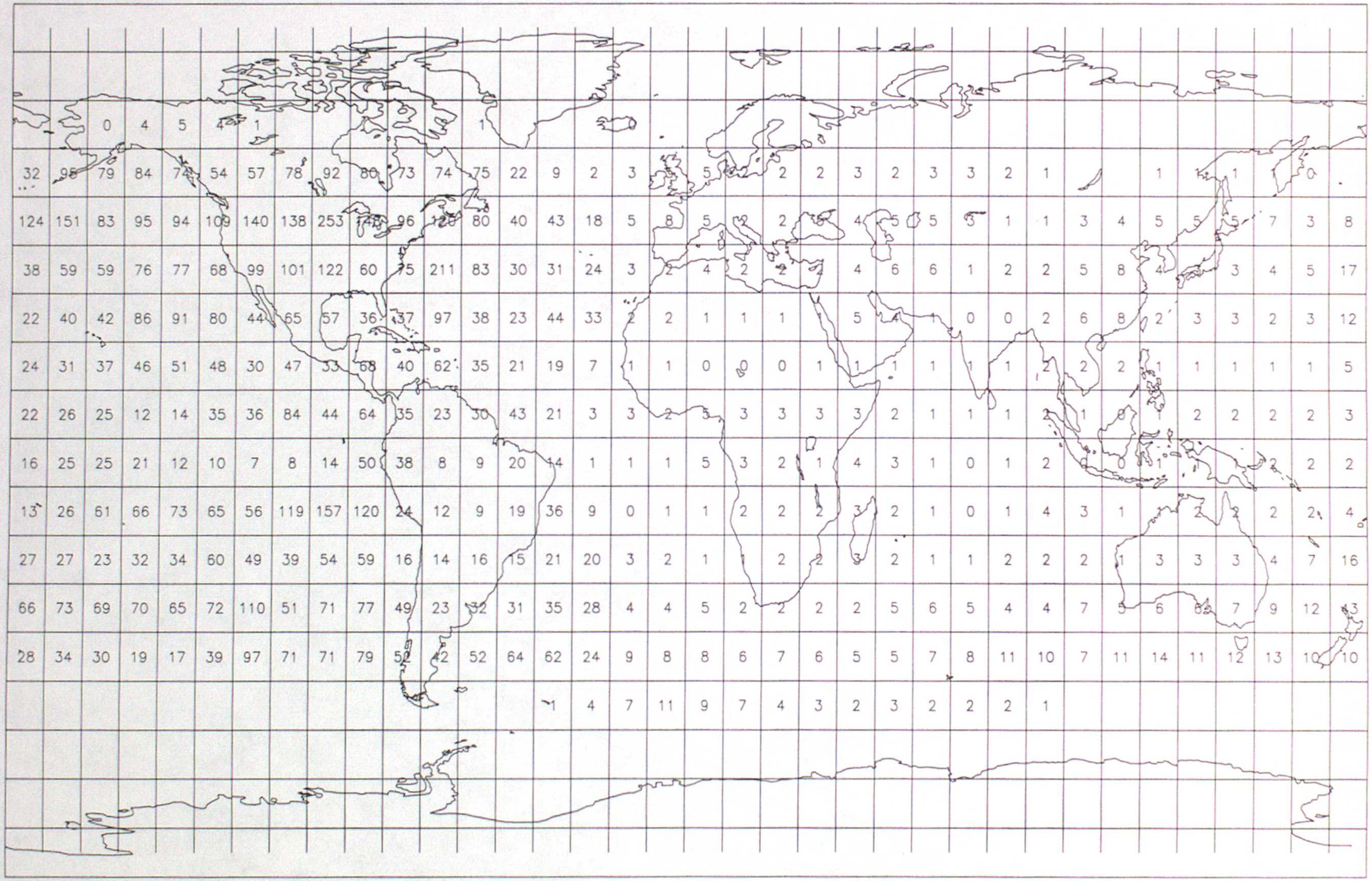

-.2 -.7 -.7 -.5 .2 -1.2 -1.6 -1.9 -.3 .3 -1.4 -.4 -.5 -.3 -.4 -.4 -.3 -.7 -.4 -.1
-.1 -.1 -.2 -.3 -.7 -.3 .4 -1.8 -2.5 -1.9 -1.4 -1.0 -.6 -.3 .4 .0 -.2 -.2 -.1 1.5 -1.8 -1.0 .3 -1.9 -1.8 -.4 -.1 -.2
-.1 -.3 -.1 .2 -.2 -.6 -.2 -.1 -2.7 -.8 -1.2 -.3 -.3 .1 .3 .0 -.1 -.5 1.4 .1 1.2 1.1 .4 .0 .5 .7 -.1
.3 .2 .1 .1 .4 .2 .1 .6 .3 .3 .2 .3 .3 .2 .1 .1 .4 6.4 11.2 .4 .1 .2 .3 .3 .5 .2
.0 .1 -.1 -.1 .6 1.1 .8 .3 -.4 .4 .3 -.4 -.2 .0 .4 1.0 21.5 22.5 15.6 9.2 -.1 .1 1.1 .2 .6 .4 .2 -.5 -.8 -.7 -.5 -.4 .2
-.1 -.7 -.5 -.5 -.3 -.3 -.1 .0 .5 1.0 1.8 .8 1.7 .0 .1 .5 .8 .6 .6 2.4 1.8 1.3 1.1 .4 .0 .9 .7 1.2 .7 .8 .0 .0 -.3 -.3 -.4 -.3
-.1 -.7 -.6 -.5 -.4 -.3 -.3 -.1 .7 1.4 2.1 1.4 1.8 1.1 -.2 -.1 .1 .1 .4 2.6 .8 .7 .4 .1 -.1 1.1 .7 1.4 1.5 1.1 1.0 .5 .0 -.1 .0
.3 .0 -.4 -.3 -.2 -.1 -.1 -.1 .0 .5 2.1 1.2 1.9 1.3 .1 .3 .3 -.3 .0 -.4 .5 .4 .2 .2 .3 .8 1.2 .5 .4 1.6 1.0 .2 .7
.3 .7 .4 .2 .2 .2 .2 .1 .1 .4 .7 1.6 2.1 .5 .2 .3 .2 -.2 -.3 .1 .6 1.1 .2 .2 .3 .3 .4 .3 .5 .6 .2 .5
.2 -.1 .0 .1 .0 -.1 .0 -.4 .1 .1 .1 .5 .2 .2 .2 .0 .0 .0 .2 .2 .8 .4 .3 .3 .0 .1 .3 .4 .5 .0 .3 .6 -.6 .4 .0 .0
.1 -.1 .0 -.3 -.5 -.2 -.2 -.4 -.3 -.1 -.6 -.9 -.4 -.1 -.1 .5 .5 .3 .2 .2 .0 .3 .0 .0 .4 .2 .7 .5 .5 .3 .2 .2 .1 .1 -.1 -.3
-.2 -.2 -.1 .0 -.5 .7 1.3 -.8 .0 .2 -.4 -.8 .0

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 701 AND 1000 HPA FIGURE 14
NOVEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


3 3 3 3 3 4 5 5 5 4 3 5 3 3 3 3 2 3 2 3
3 3 3 3 3 3 4 5 5 4 4 3 4 4 4 2 3 4 5 4 6 4 5 4 3 3 3
4 3 3 3 3 3 4 4 6 5 4 3 3 3 3 2 3 3 4 3 3 4 3 4 3 3
3 3 3 3 3 3 3 4 4 3 3 3 3 3 2 2 3 14 24 5 4 3 3 3 3 3
3 3 3 3 3 3 3 3 5 3 3 3 3 3 3 7 32 35 25 17 3 4 6 4 5 5 5 3 3 3 3 3 3
3 3 3 4 3 3 3 3 4 4 4 3 4 4 3 4 5 5 9 10 7 6 7 3 3 4 4 7 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 4 5 4 4 4 3 3 3 4 4 8 6 4 3 3 3 5 5 4 5 3 4 3 3 3 3
3 2 3 2 2 2 3 3 3 3 4 4 4 3 3 2 2 2 5 4 4 3 3 4 3 3 3 3 3 4 3 3 4
3 3 3 3 3 3 3 3 3 3 3 6 5 3 3 3 3 2 3 3 5 4 3 2 3 3 3 3 3 3 3 3
3 3 3 3 3 3 3 3 3 3 3 5 3 3 3 3 3 3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 4 3 3 3
3 3 3 3 3 3 3 3 3 3 3 4 3 3 3 3 3 3 3 3 3 4 4 4 4 3 3 3 3 3 3 3 3 3 3 3
3 3 3 3 4 7 6 3 3 3 3 3 3

AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 401 AND 700 HPA FIGURE 15
NOVEMBER 2000

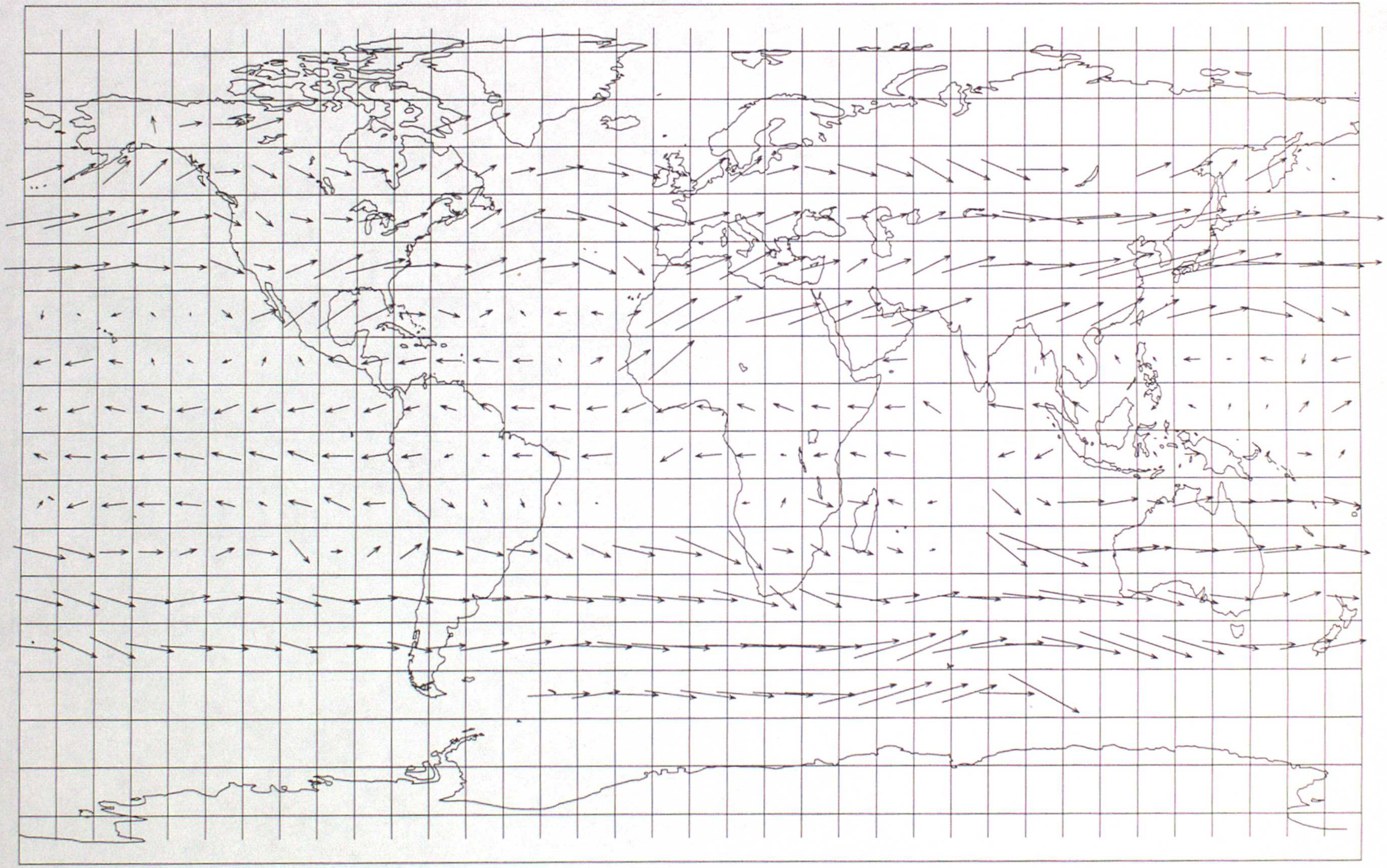
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 10084



		0	4	5	4	1						1																							
32	95	79	84	74	54	57	78	92	80	73	74	75	22	9	2	3		5	2	2	2	3	2	3	3	2	1			1	1	1	1	0	
124	151	83	95	94	109	140	138	253	148	96	120	80	40	43	18	5	8	5	2	2	5	4	5	5	3	1	1	3	4	5	5	5	7	3	8
38	59	59	76	77	68	99	101	122	60	75	211	83	30	31	24	3	2	4	2	2	4	4	6	6	1	2	2	5	8	4		3	4	5	17
22	40	42	86	91	80	44	65	57	36	37	97	38	23	44	33	2	2	1	1	1	1	5	4	1	0	0	2	6	8	2	3	3	2	3	12
24	31	37	46	51	48	30	47	33	68	40	62	35	21	19	7	1	1	0	0	0	1	1	1	1	1	1	2	2	2	1	1	1	1	1	5
22	26	25	12	14	35	36	84	44	64	35	23	30	43	21	3	3	2	5	3	3	3	3	2	1	1	1	2	1	0	1	2	2	2	2	3
16	25	25	21	12	10	7	8	14	50	38	8	9	20	14	1	1	1	5	3	2	1	4	3	1	0	1	2	0	0	1	1	1	2	2	2
13	26	61	66	73	65	56	119	157	120	24	12	9	19	36	9	0	1	1	2	2	2	3	2	1	0	1	4	3	1	1	2	2	2	2	4
27	27	23	32	34	60	49	39	54	59	16	14	16	15	21	20	3	2	1	1	2	2	3	2	1	1	2	2	2	1	3	3	3	4	7	16
66	73	69	70	65	72	110	51	71	77	49	23	32	31	35	28	4	4	5	2	2	2	2	5	6	5	4	4	7	5	6	6	7	9	12	13
28	34	30	19	17	39	97	71	71	79	52	42	52	64	62	24	9	8	8	6	7	6	5	5	7	8	11	10	7	11	14	11	12	13	10	10
														1	4	7	11	9	7	4	3	2	3	2	2	2	1								

SATOB VECTOR MEAN WINDS BETWEEN 401–700 HPA
NOVEMBER 2000
ALL OBSERVATIONS
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 16



→ REPRESENTS 10 M/S

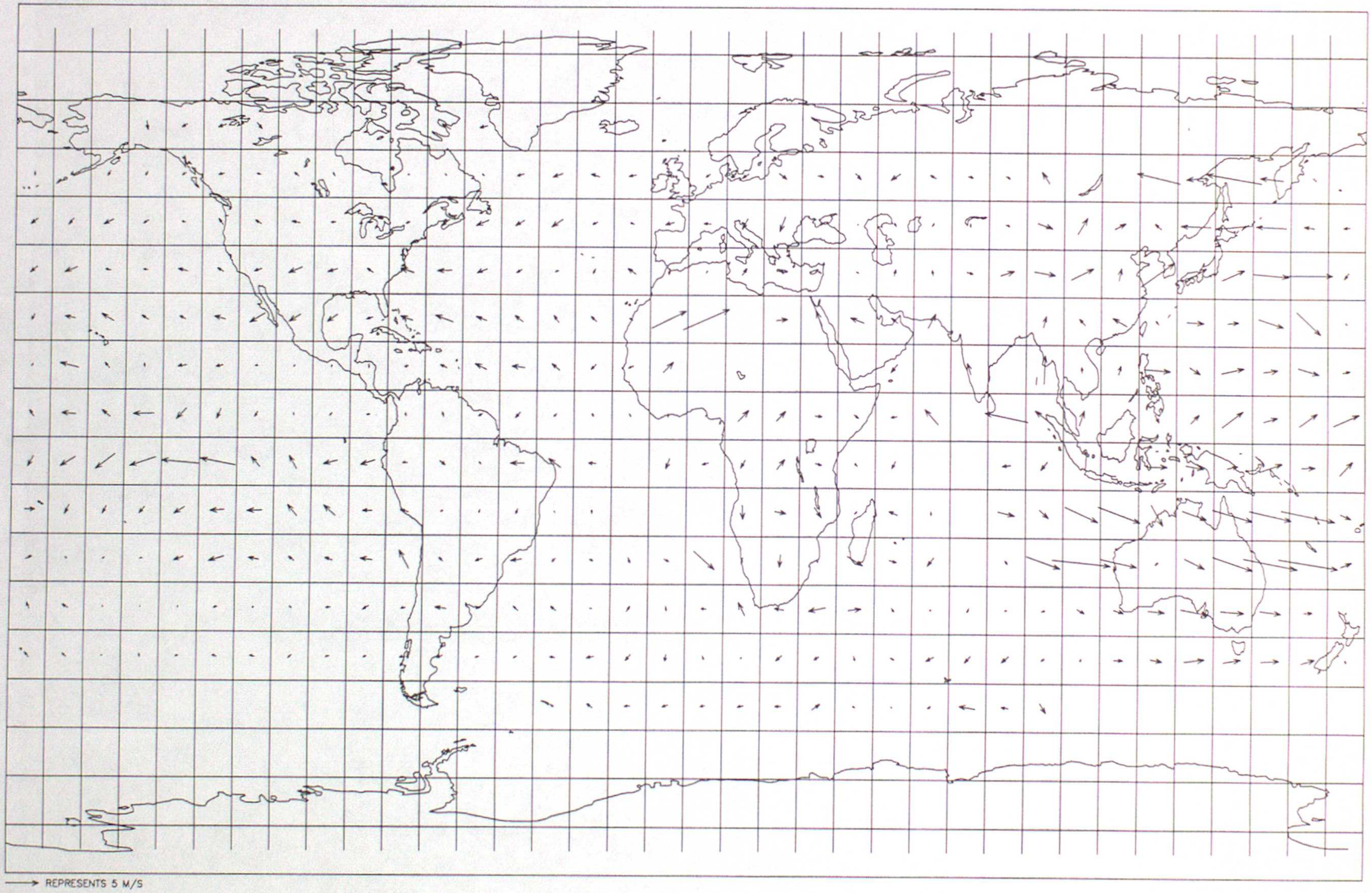
SATOB O-B VECTOR WIND DIFFERENCES BETWEEN 401-700 HPA

FIGURE 17

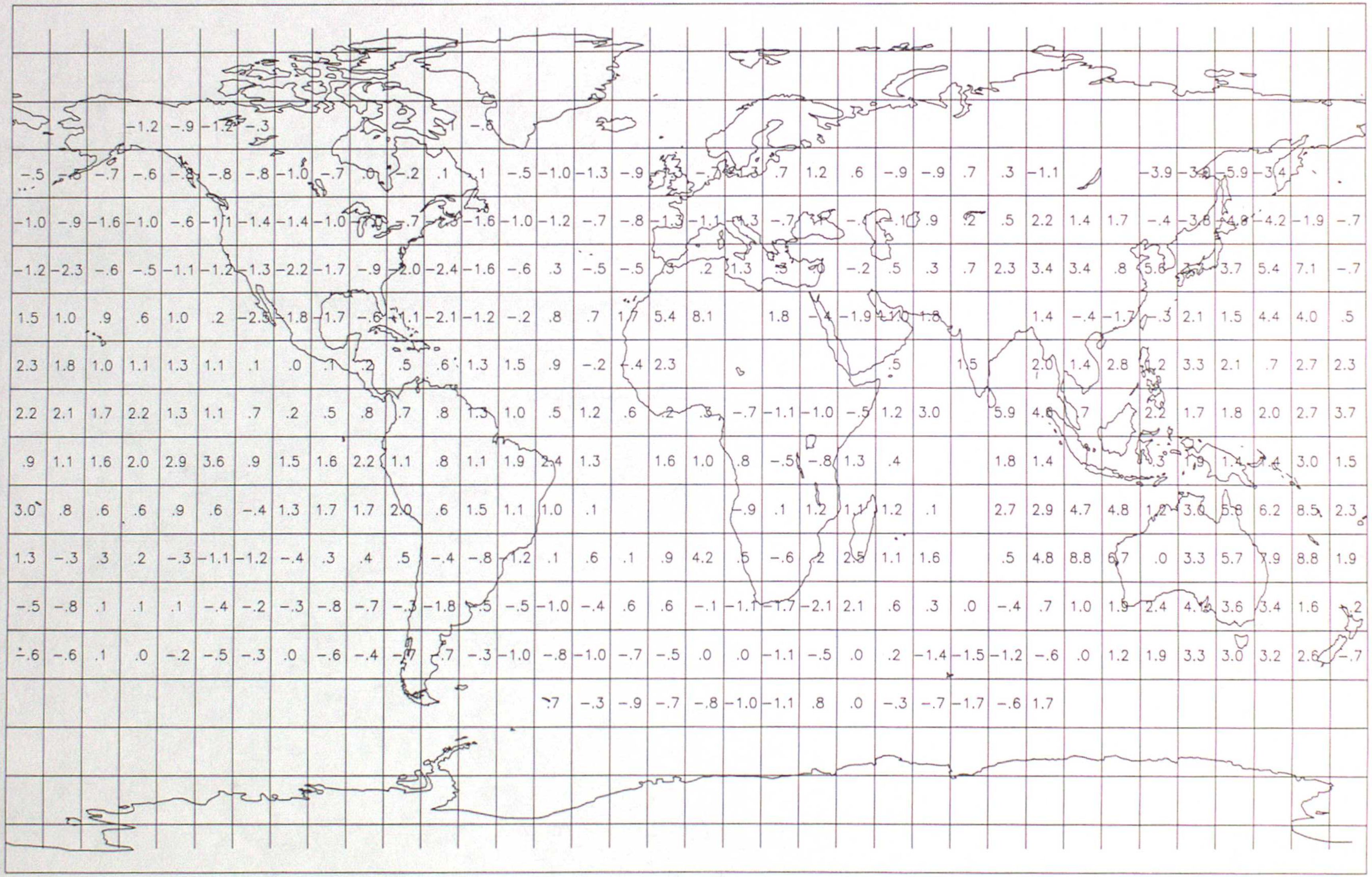
NOVEMBER 2000

ALL OBSERVATIONS

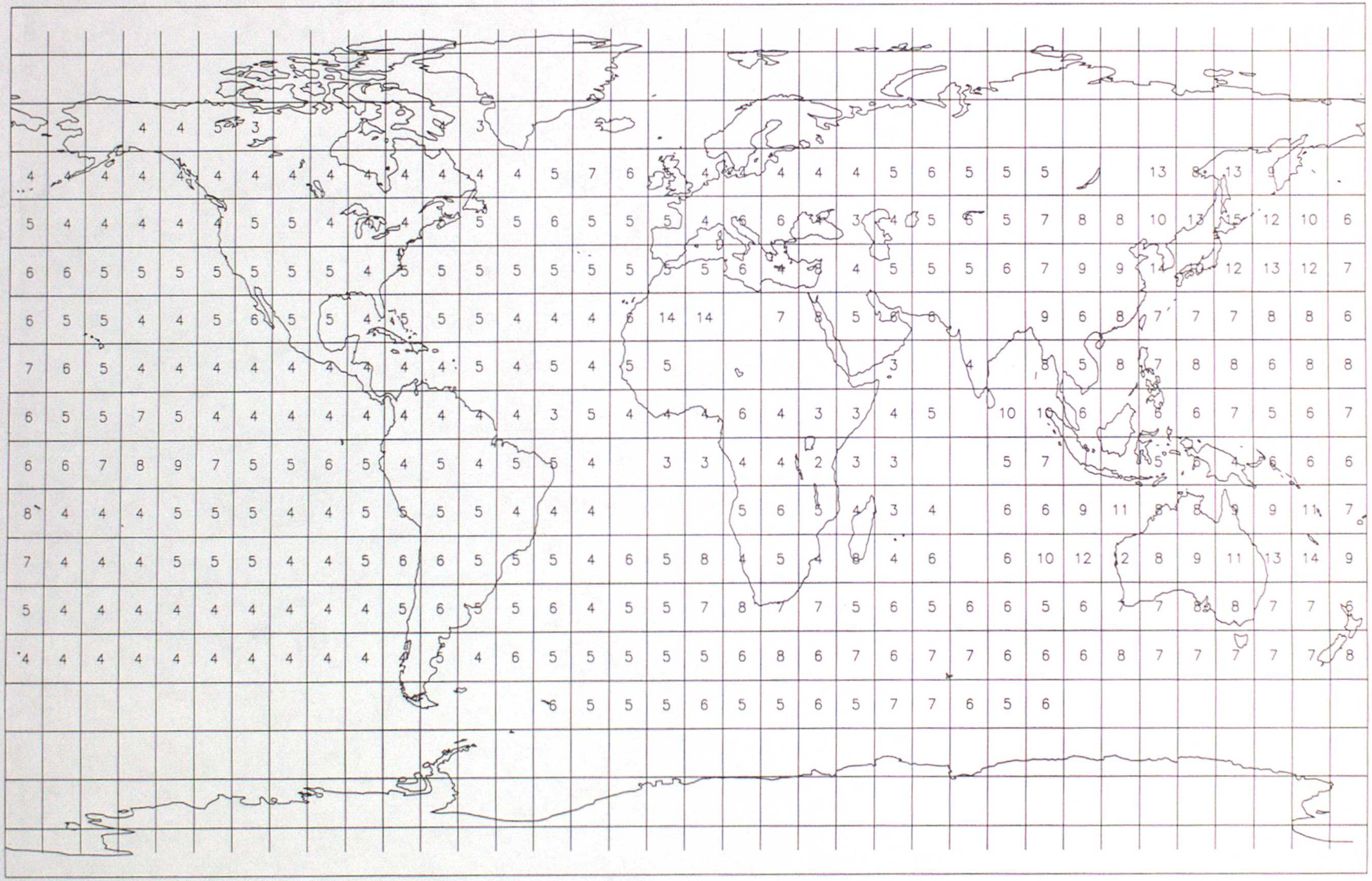
ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT



SATOBS : MEAN O–B SPEED DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 18
NOVEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT

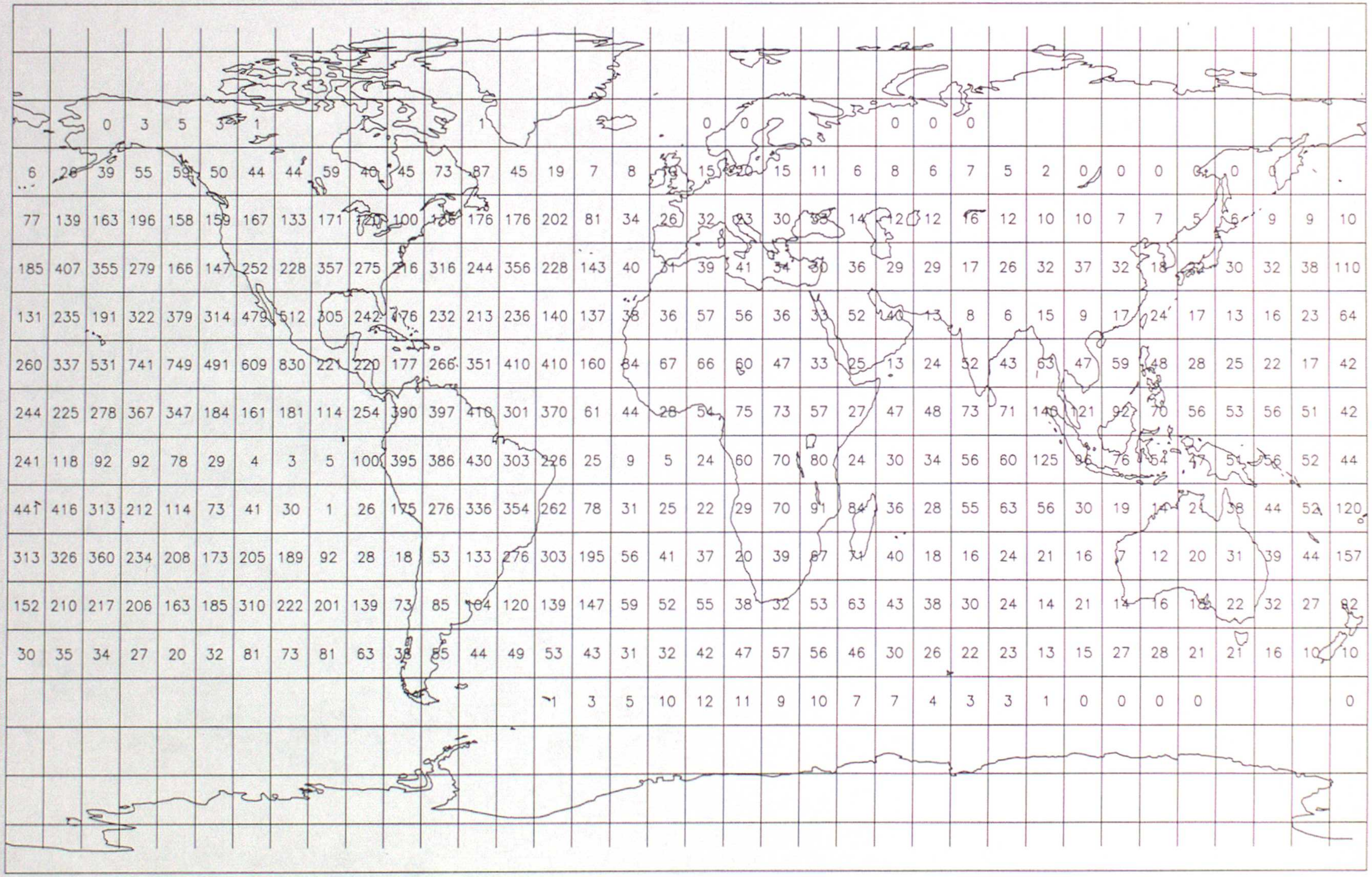

-1.2 -.9 -1.2 -.3 .1 -.6
-.5 -.6 -.7 -.6 -.8 -.8 -.8 -1.0 -.7 .0 -.2 .1 .1 -.5 -1.0 -1.3 -.9 -.7 -1.3 .7 1.2 .6 -.9 -.9 .7 .3 -1.1 -3.9 -3.9 -5.9 -3.4
-1.0 -.9 -1.6 -1.0 -.6 -1.1 -1.4 -1.4 -1.0 -1.0 -.7 -1.6 -1.0 -1.2 -.7 -.8 -1.3 -1.1 -1.3 -.7 -1.0 .9 .2 .5 2.2 1.4 1.7 -.4 -3.8 -4.8 -4.2 -1.9 -.7
-1.2 -2.3 -.6 -.5 -1.1 -1.2 -1.3 -2.2 -1.7 -.9 -2.0 -2.4 -1.6 -.6 .3 -.5 -.5 .3 .2 1.3 .3 .0 -.2 .5 .3 .7 2.3 3.4 3.4 .8 5.6 3.7 5.4 7.1 -.7
1.5 1.0 .9 .6 1.0 .2 -2.5 -1.8 -1.7 -.6 -1.1 -2.1 -1.2 -.2 .8 .7 1.7 5.4 8.1 1.8 -.4 -1.9 -1.0 1.8 1.4 -.4 -1.7 -.3 2.1 1.5 4.4 4.0 .5
2.3 1.8 1.0 1.1 1.3 1.1 .1 .0 .1 .2 .5 .6 1.3 1.5 .9 -.2 -.4 2.3 .5 1.5 2.0 1.4 2.8 1.2 3.3 2.1 .7 2.7 2.3
2.2 2.1 1.7 2.2 1.3 1.1 .7 .2 .5 .8 .7 .8 1.3 1.0 .5 1.2 .6 .2 .3 -.7 -1.1 -1.0 -.5 1.2 3.0 5.9 4.6 .7 2.2 1.7 1.8 2.0 2.7 3.7
.9 1.1 1.6 2.0 2.9 3.6 .9 1.5 1.6 2.2 1.1 .8 1.1 1.9 2.4 1.3 1.6 1.0 .8 -.5 -.8 1.3 .4 1.8 1.4 .3 1.9 1.4 1.4 3.0 1.5
3.0 .8 .6 .6 .9 .6 -.4 1.3 1.7 1.7 2.0 .6 1.5 1.1 1.0 .1 -.9 .1 1.2 1.1 1.2 .1 2.7 2.9 4.7 4.8 1.2 3.0 5.8 6.2 8.5 2.3
1.3 -.3 .3 .2 -.3 -1.1 -1.2 -.4 .3 .4 .5 -.4 -.8 -1.2 .1 .6 .1 .9 4.2 .5 -.6 .2 2.5 1.1 1.6 .5 4.8 8.8 6.7 .0 3.3 5.7 7.9 8.8 1.9
-.5 -.8 .1 .1 .1 -.4 -.2 -.3 -.8 -.7 -.3 -1.8 -.5 -.5 -1.0 -.4 .6 .6 -.1 -1.1 -1.7 -2.1 2.1 .6 .3 .0 -.4 .7 1.0 1.9 2.4 4.6 3.6 3.4 1.6 -.2
-.6 -.6 .1 .0 -.2 -.5 -.3 .0 -.6 -.4 -.7 -.7 -.3 -1.0 -.8 -1.0 -.7 -.5 .0 .0 -1.1 -.5 .0 .2 -1.4 -1.5 -1.2 -.6 .0 1.2 1.9 3.3 3.0 3.2 2.6 -.7
.7 -.3 -.9 -.7 -.8 -1.0 -1.1 .8 .0 -.3 -.7 -1.7 -.6 1.7

SATOBS : RMS O-B VECTOR DIFFERENCES (M/S) BETWEEN 401 AND 700 HPA FIGURE 19
NOVEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT



AVERAGE DAILY NUMBER OF SATOB OBSERVATIONS BETWEEN 101 AND 400 HPA FIGURE 20
NOVEMBER 2000

GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 42732



		0	3	5	3	1						1						0	0				0	0	0										
6	28	39	55	59	50	44	44	59	40	45	73	87	45	19	7	8	19	15	20	15	11	6	8	6	7	5	2	0	0	0	0	0	0		
77	139	163	196	158	159	167	133	171	120	100	136	176	176	202	81	34	26	32	33	30	33	14	12	12	16	12	10	10	7	7	5	6	9	9	10
185	407	355	279	166	147	252	228	357	275	216	316	244	356	228	143	40	31	39	41	34	30	36	29	29	17	26	32	37	32	18	22	30	32	38	110
131	235	191	322	379	314	479	512	305	242	476	232	213	236	140	137	38	36	57	56	36	33	52	40	13	8	6	15	9	17	24	17	13	16	23	64
260	337	531	741	749	491	609	830	221	220	177	266	351	410	410	160	84	67	66	60	47	33	25	13	24	52	43	63	47	59	48	28	25	22	17	42
244	225	278	367	347	184	161	181	114	254	390	397	410	301	370	61	44	28	54	75	73	57	27	47	48	73	71	140	121	92	70	56	53	56	51	42
241	118	92	92	78	29	4	3	5	100	395	386	430	303	226	25	9	5	24	60	70	80	24	30	34	56	60	125	96	76	54	47	51	56	52	44
441	416	313	212	114	73	41	30	1	26	175	276	336	354	262	78	31	25	22	29	70	91	84	36	28	55	63	56	30	19	14	21	38	44	52	120
313	326	360	234	208	173	205	189	92	28	18	53	133	276	303	195	56	41	37	20	39	67	71	40	18	16	24	21	16	7	12	20	31	39	44	157
152	210	217	206	163	185	310	222	201	139	73	85	104	120	139	147	59	52	55	38	32	53	63	43	38	30	24	14	21	14	16	18	22	32	27	82
30	35	34	27	20	32	81	73	81	63	38	85	44	49	53	43	31	32	42	47	57	56	46	30	26	22	23	13	15	27	28	21	21	16	10	10
														1	3	5	10	12	11	9	10	7	7	4	3	3	1	0	0	0	0				0

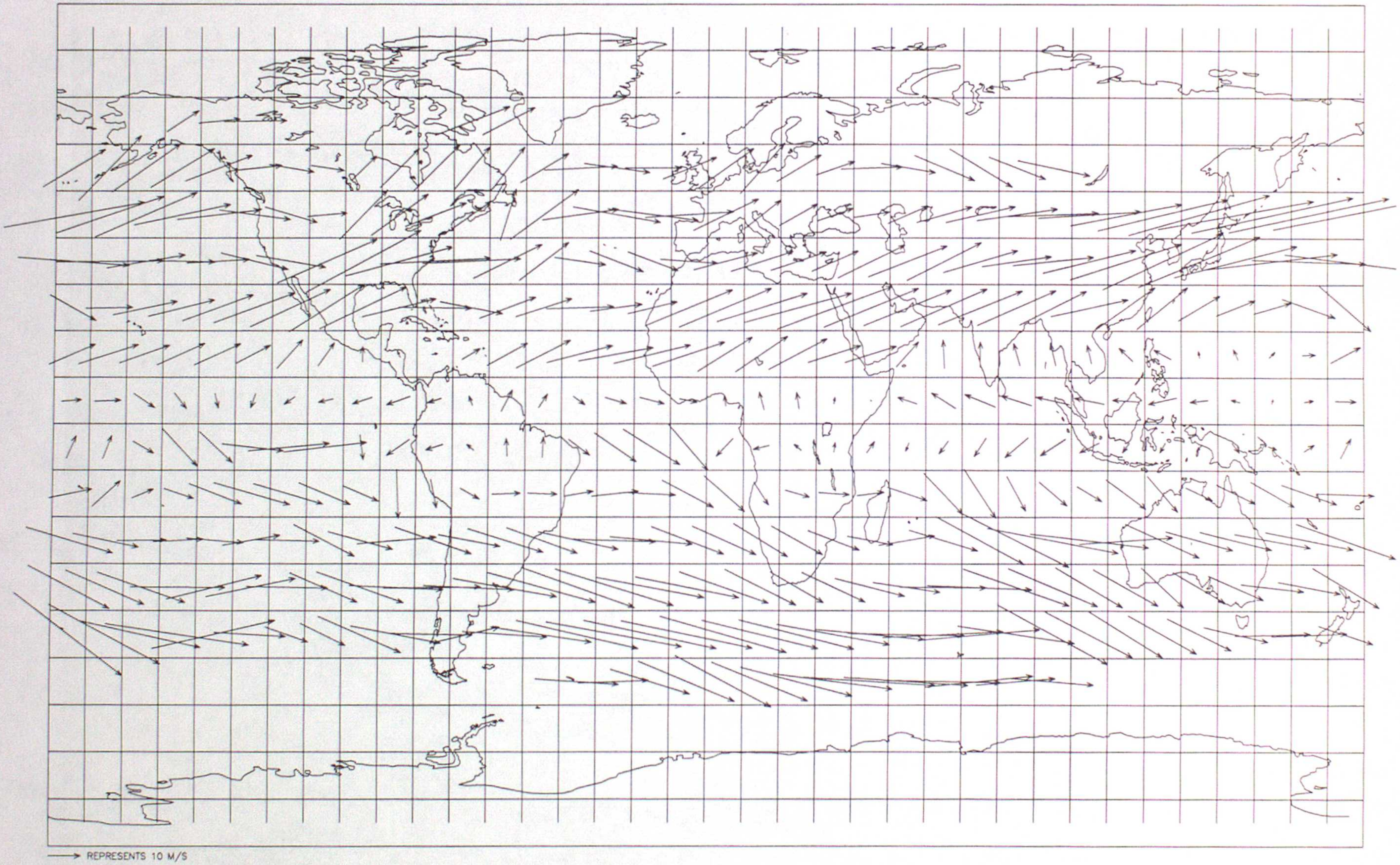
SATOB METEOSAT W/V VECTOR MEAN WINDS BETWEEN 101–400 HPA

NOVEMBER 2000

ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

FIGURE 21


REPRESENTS 10 M/S

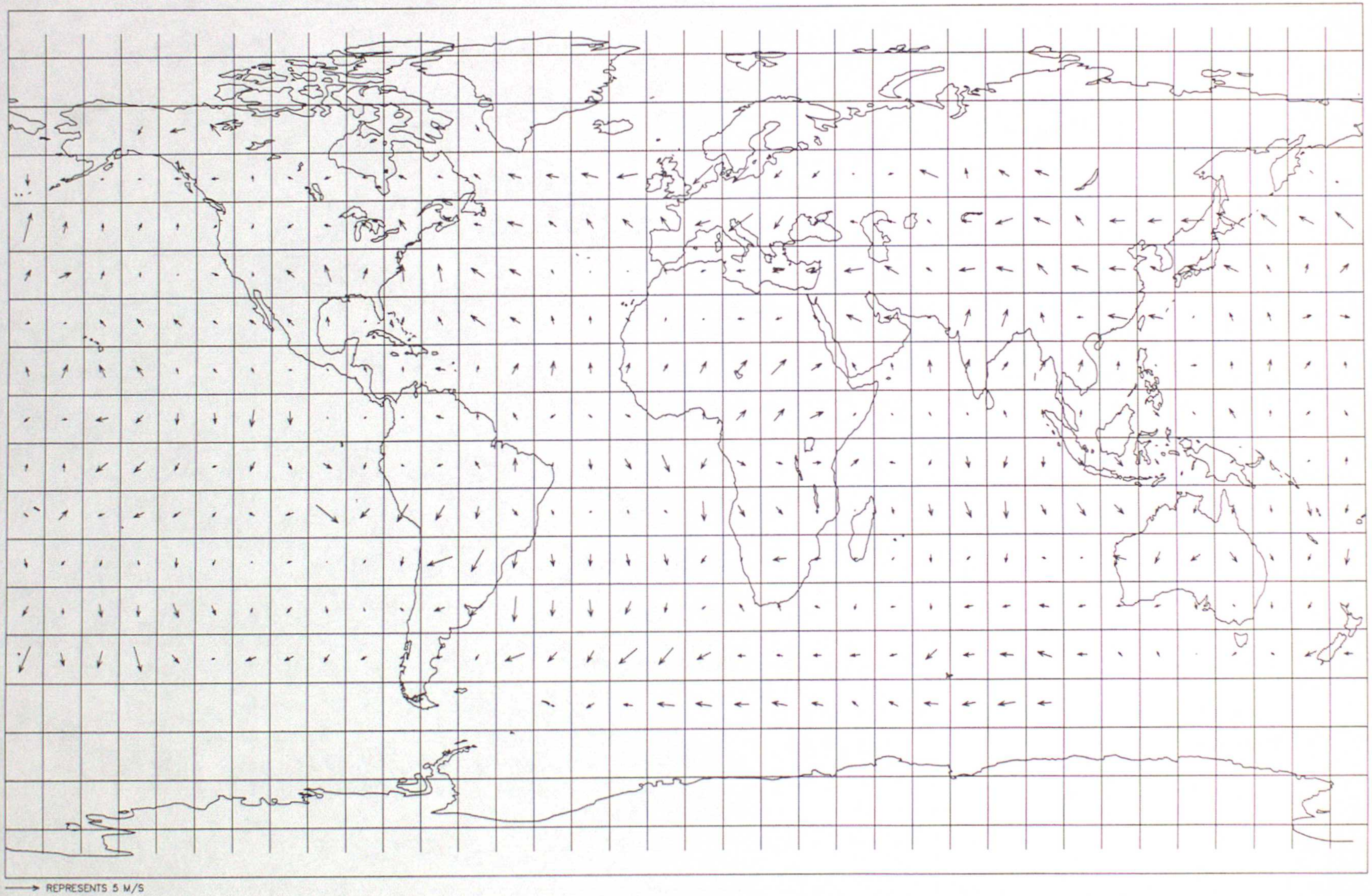
SATOB O–B VECTOR WIND DIFFERENCES BETWEEN 101–400 HPA

NOVEMBER 2000

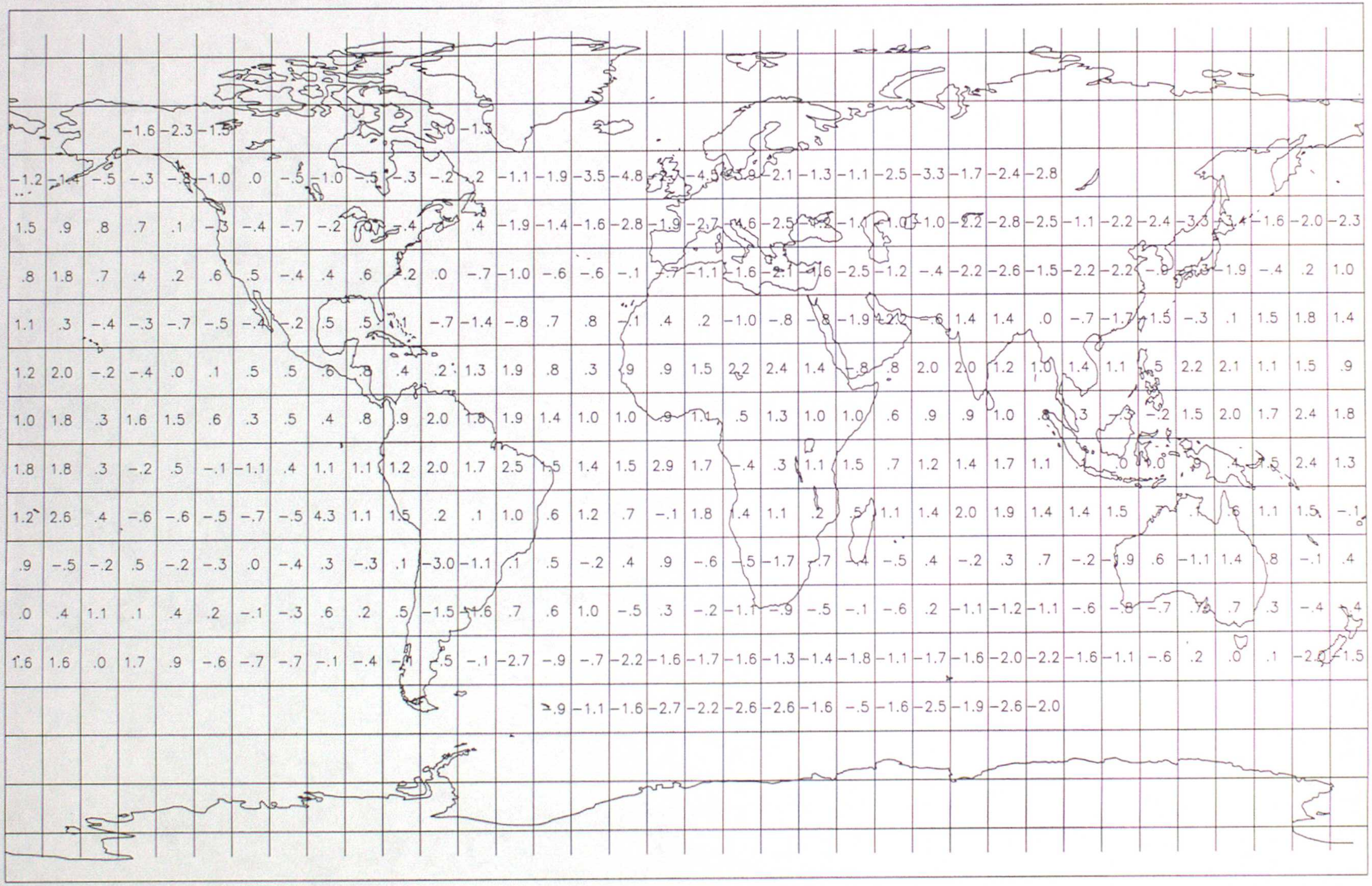
ALL OBSERVATIONS

ARROWS PLOTTED WHERE MORE THAN 10 OBS ARE PRESENT

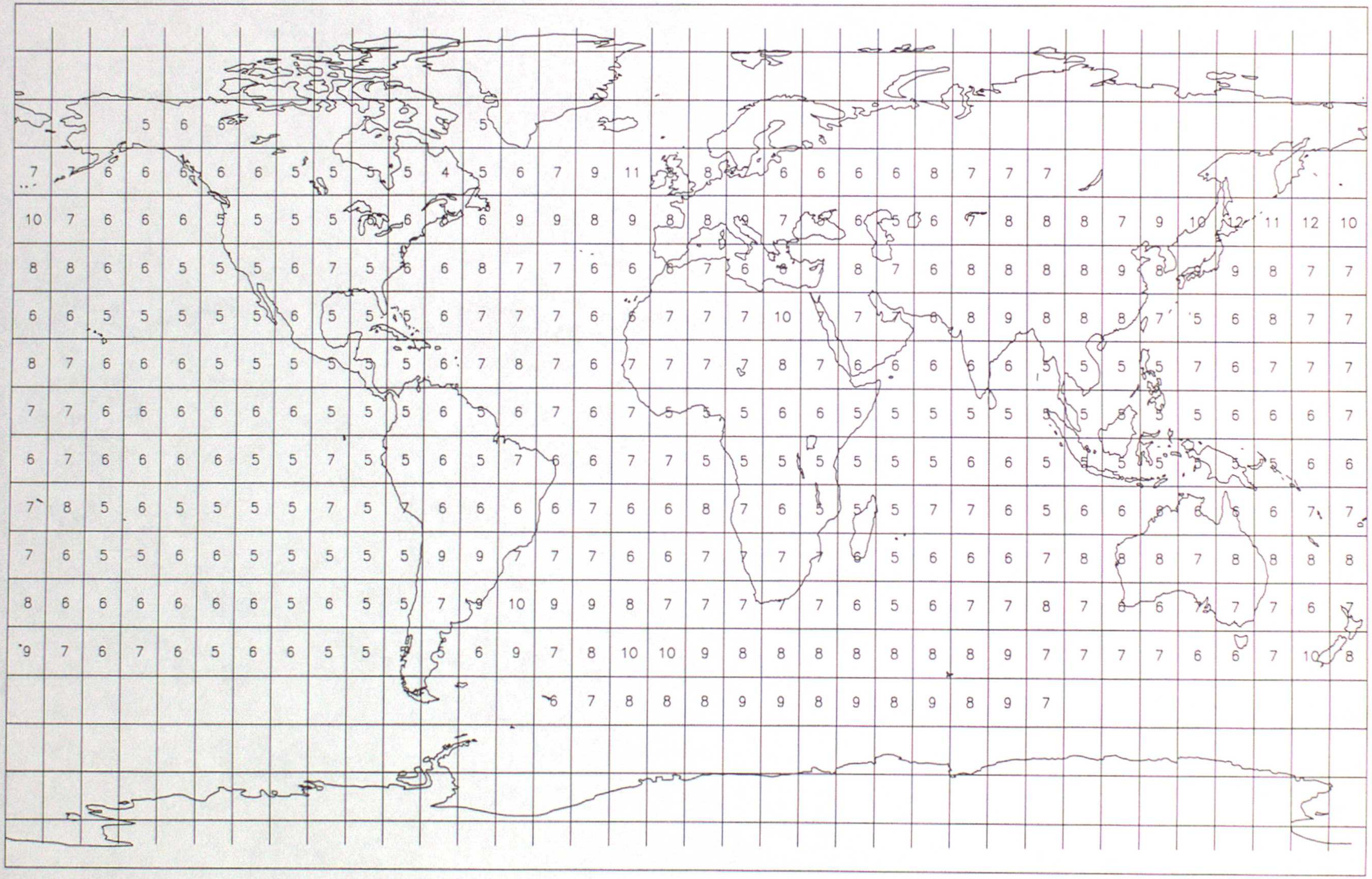
FIGURE 22



SATOBS : MEAN O−B SPEED DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 23
NOVEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


-1.6 -2.3 -1.5 -1.0 -1.3
-1.2 -1.4 -.5 -.3 -.8 -1.0 .0 -.5 -1.0 -.5 -.3 -.2 .2 -1.1 -1.9 -3.5 -4.8 -2.7 -4.5 -3.9 -2.1 -1.3 -1.1 -2.5 -3.3 -1.7 -2.4 -2.8
1.5 .9 .8 .7 .1 -.3 -.4 -.7 -.2 .0 -.4 .4 -1.9 -1.4 -1.6 -2.8 -1.9 -2.7 -4.6 -2.5 -1.2 -1.1 -1.0 -1.0 -2.2 -2.8 -2.5 -1.1 -2.2 -2.4 -3.3 -3.4 -1.6 -2.0 -2.3
.8 1.8 .7 .4 .2 .6 .5 -.4 .4 .6 .2 .0 -.7 -1.0 -.6 -.6 -.1 -.7 -1.1 -1.6 -2.1 -1.6 -2.5 -1.2 -.4 -2.2 -2.6 -1.5 -2.2 -2.2 -.8 -.3 -1.9 -.4 .2 1.0
1.1 .3 -.4 -.3 -.7 -.5 -.4 -.2 .5 .5 .1 -.7 -1.4 -.8 .7 .8 -.1 .4 .2 -1.0 -.8 -.8 -1.9 -2.2 -.6 1.4 1.4 .0 -.7 -1.7 1.5 -.3 .1 1.5 1.8 1.4
1.2 2.0 -.2 -.4 .0 .1 .5 .5 .6 .8 .4 .2 1.3 1.9 .8 .3 .9 .9 1.5 2.2 2.4 1.4 -.8 .8 2.0 2.0 1.2 1.0 1.4 1.1 .5 2.2 2.1 1.1 1.5 .9
1.0 1.8 .3 1.6 1.5 .6 .3 .5 .4 .8 .9 2.0 1.8 1.9 1.4 1.0 1.0 .9 1.1 .5 1.3 1.0 1.0 .6 .9 .9 1.0 .8 .3 -.3 -.2 1.5 2.0 1.7 2.4 1.8
1.8 1.8 .3 -.2 .5 -.1 -1.1 .4 1.1 1.1 1.2 2.0 1.7 2.5 1.5 1.4 1.5 2.9 1.7 -.4 .3 1.1 1.5 .7 1.2 1.4 1.7 1.1 .1 .0 1.0 .9 .4 1.5 2.4 1.3
1.2 2.6 .4 -.6 -.6 -.5 -.7 -.5 4.3 1.1 1.5 .2 .1 1.0 .6 1.2 .7 -.1 1.8 1.4 1.1 .2 .5 1.1 1.4 2.0 1.9 1.4 1.4 1.5 .7 .1 .6 1.1 1.5 -.1
.9 -.5 -.2 .5 -.2 -.3 .0 -.4 .3 -.3 .1 -3.0 -1.1 .1 .5 -.2 .4 .9 -.6 -.5 -1.7 -.7 -.4 -.5 .4 -.2 .3 .7 -.2 -1.9 .6 -1.1 1.4 .8 -.1 .4
.0 .4 1.1 .1 .4 .2 -.1 -.3 .6 .2 .5 -1.5 -1.6 .7 .6 1.0 -.5 .3 -.2 -1.1 -.9 -.5 -.1 -.6 .2 -1.1 -1.2 -1.1 -.6 -.8 -.7 .7 .7 .3 -.4 .4
1.6 1.6 .0 1.7 .9 -.6 -.7 -.7 -.1 -.4 -.1 .5 -.1 -2.7 -.9 -.7 -2.2 -1.6 -1.7 -1.6 -1.3 -1.4 -1.8 -1.1 -1.7 -1.6 -2.0 -2.2 -1.6 -1.1 -.6 .2 .0 .1 -2.0 -1.5
.9 -1.1 -1.6 -2.7 -2.2 -2.6 -2.6 -1.6 -.5 -1.6 -2.5 -1.9 -2.6 -2.0

SATOBS : RMS O–B VECTOR DIFFERENCES (M/S) BETWEEN 101 AND 400 HPA FIGURE 24
NOVEMBER 2000
USING ALL OBSERVATIONS
VALUES ARE PRINTED WHERE MORE THAN 10 OBS ARE PRESENT


5 6 6 5
7 7 6 6 6 6 6 5 5 5 5 4 5 6 7 9 11 8 8 6 6 6 6 8 7 7 7
10 7 6 6 6 5 5 5 5 6 6 6 9 9 8 9 8 8 9 7 8 6 5 6 7 8 8 8 7 9 10 12 11 12 10
8 8 6 6 5 5 5 6 7 5 6 6 8 7 7 6 6 6 7 6 8 7 8 7 6 8 8 8 8 9 8 9 9 8 7 7
6 6 5 5 5 5 5 6 5 5 5 6 7 7 7 6 6 7 7 7 10 7 7 7 6 8 9 8 8 8 7 5 6 8 7 7
8 7 6 6 6 5 5 5 5 5 5 6 7 8 7 6 7 7 7 7 8 7 6 6 6 6 6 5 5 5 5 7 6 7 7 7
7 7 6 6 6 6 6 6 5 5 5 6 5 6 7 6 7 5 5 5 6 6 5 5 5 5 5 5 5 5 5 5 6 6 6 7
6 7 6 6 6 6 5 5 7 5 5 6 5 7 6 6 7 7 5 5 5 5 5 5 5 6 6 5 5 5 5 5 5 5 6 6
7 8 5 6 5 5 5 5 7 5 7 6 6 6 6 7 6 6 8 7 6 5 5 5 7 7 6 5 6 6 8 6 6 6 7 7
7 6 5 5 6 6 5 5 5 5 5 9 9 7 7 7 6 6 7 7 7 7 6 5 6 6 6 7 8 8 8 7 8 8 8 8
8 6 6 6 6 6 6 5 6 5 5 7 9 10 9 9 8 7 7 7 7 7 6 5 6 7 7 8 7 6 6 7 7 7 6 7
9 7 6 7 6 5 6 6 5 5 5 5 6 9 7 8 10 10 9 8 8 8 8 8 8 8 9 7 7 7 7 6 6 7 10 8
6 7 8 8 8 9 9 8 9 8 9 8 9 7

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

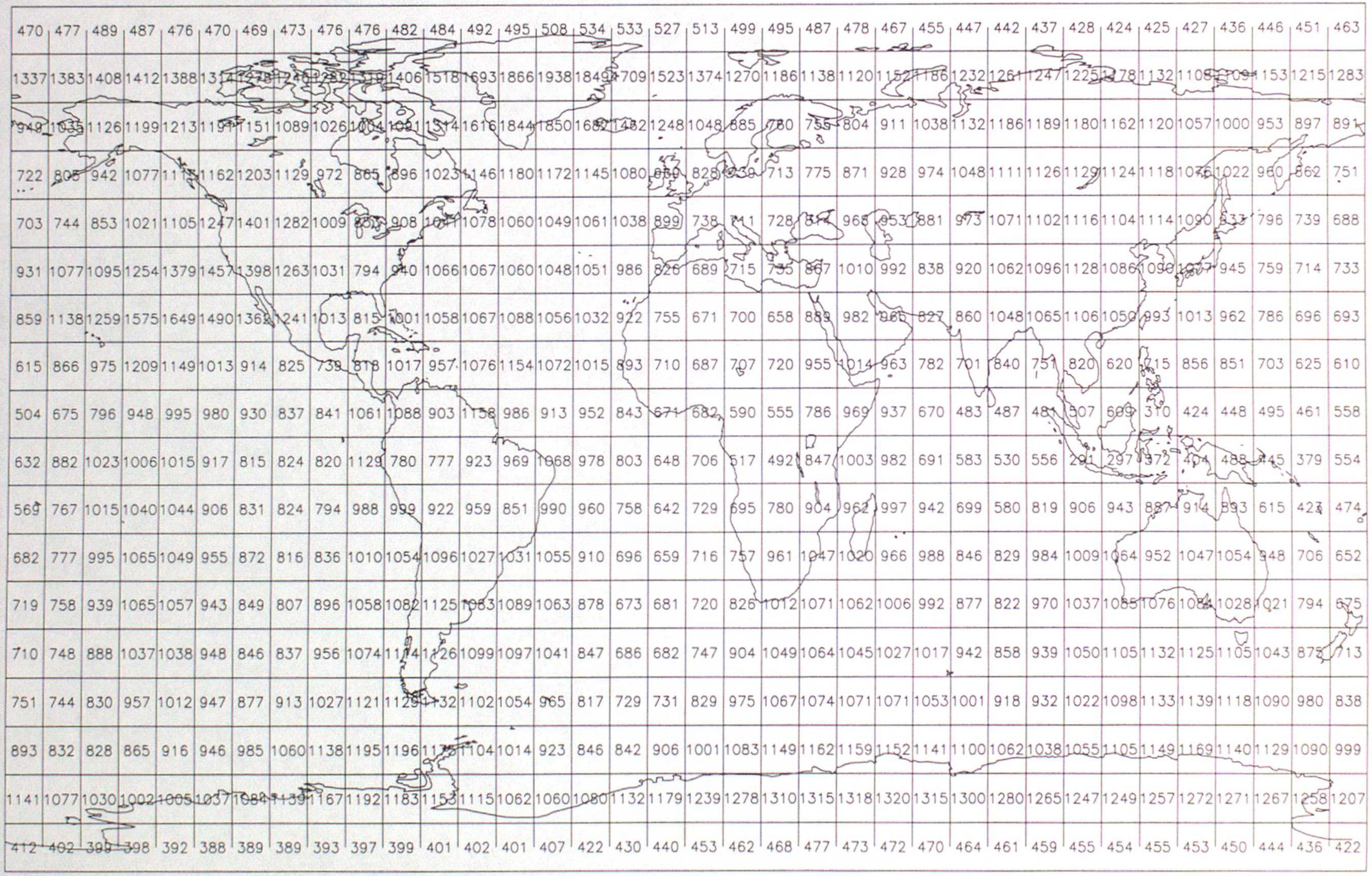
Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

ATOVS : MEAN DAILY NUMBER OF OBSERVATIONS
NOVEMBER 2000
NOAA–15, USING ALL OBSERVATIONS
GLOBAL AVERAGE NUMBER OF OBSERVATIONS IN 24 HOURS = 595983

FIGURE 25



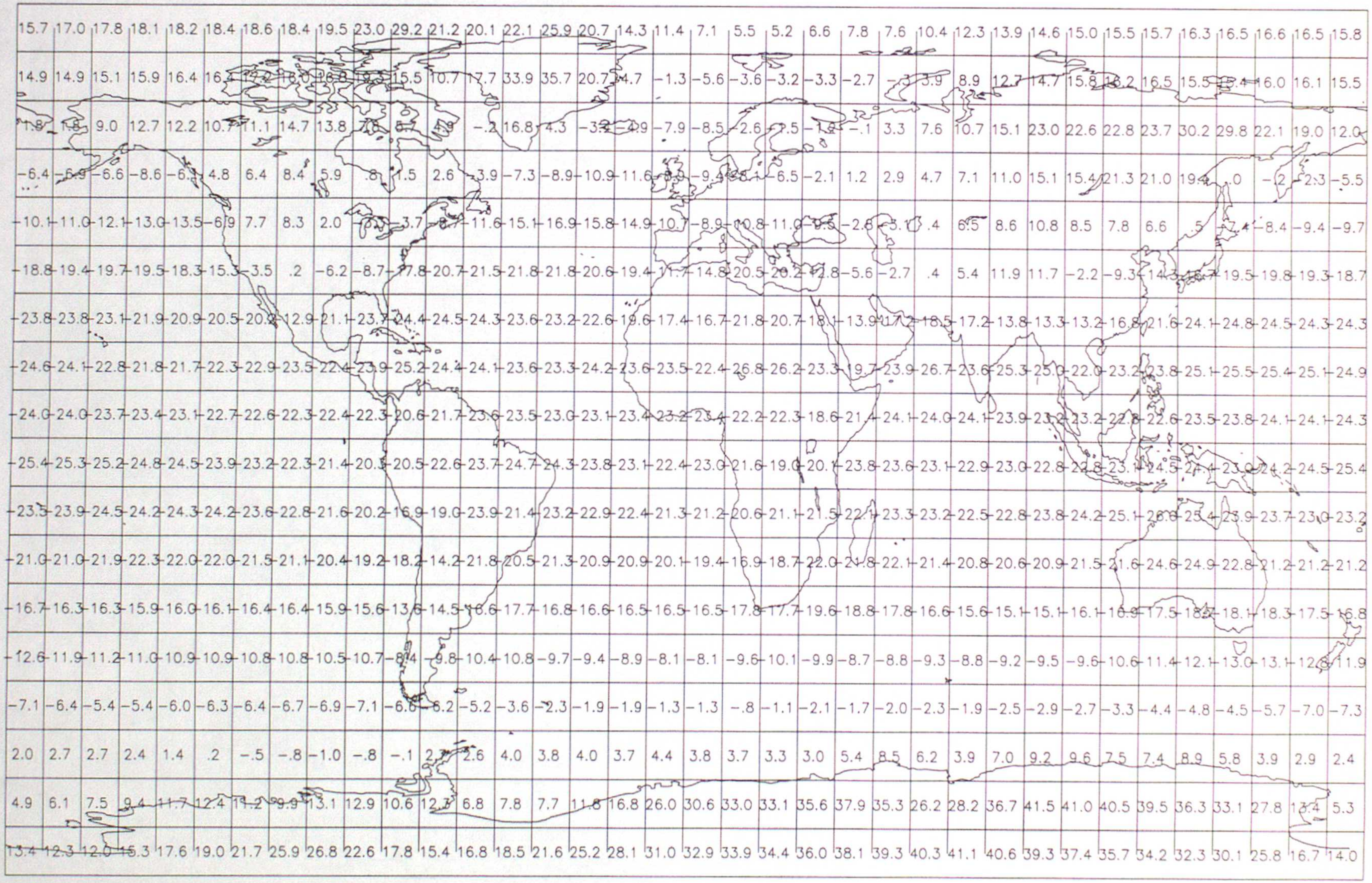
470	477	489	487	476	470	469	473	476	476	482	484	492	495	508	534	533	527	513	499	495	487	478	467	455	447	442	437	428	424	425	427	436	446	451	463
1337	1383	1408	1412	1388	1314	1278	1246	1282	1319	1406	1518	1693	1866	1938	1849	1709	1523	1374	1270	1186	1138	1120	1152	1186	1232	1261	1247	1225	1278	1132	1108	1109	1153	1215	1283
949	1035	1126	1199	1213	1191	1151	1089	1026	1004	1081	1314	1616	1844	1850	1682	1482	1248	1048	885	780	755	804	911	1038	1132	1186	1189	1180	1162	1120	1057	1000	953	897	891
722	805	942	1077	1115	1162	1203	1129	972	865	896	1023	1146	1180	1172	1145	1080	880	828	939	713	775	871	928	974	1048	1111	1126	1129	1124	1118	1076	1022	960	862	751
703	744	853	1021	1105	1247	1401	1282	1009	865	908	1071	1078	1060	1049	1061	1038	899	738	711	728	814	968	953	881	973	1071	1102	1116	1104	1114	1090	833	796	739	688
931	1077	1095	1254	1379	1457	1398	1263	1031	794	940	1066	1067	1060	1048	1051	986	826	689	715	735	867	1010	992	838	920	1062	1096	1128	1086	1090	1077	945	759	714	733
859	1138	1259	1575	1649	1490	1362	1241	1013	815	1001	1058	1067	1088	1056	1032	922	755	671	700	658	889	982	965	827	860	1048	1065	1106	1050	993	1013	962	786	696	693
615	866	975	1209	1149	1013	914	825	739	818	1017	957	1076	1154	1072	1015	893	710	687	707	720	955	1014	963	782	701	840	751	820	620	715	856	851	703	625	610
504	675	796	948	995	980	930	837	841	1061	1088	903	1158	986	913	952	843	671	682	590	555	786	969	937	670	483	487	481	507	609	310	424	448	495	461	558
632	882	1023	1006	1015	917	815	824	820	1129	780	777	923	969	1068	978	803	648	706	517	492	847	1003	982	691	583	530	556	291	297	372	404	488	445	379	554
569	767	1015	1040	1044	906	831	824	794	988	999	922	959	851	990	960	758	642	729	695	780	904	962	997	942	699	580	819	906	943	887	914	893	615	423	474
682	777	995	1065	1049	955	872	816	836	1010	1054	1096	1027	1031	1055	910	696	659	716	757	961	1047	1020	966	988	846	829	984	1009	1064	952	1047	1054	948	706	652
719	758	939	1065	1057	943	849	807	896	1058	1082	1125	1083	1089	1063	878	673	681	720	826	1012	1071	1062	1006	992	877	822	970	1037	1085	1076	1084	1028	1021	794	675
710	748	888	1037	1038	948	846	837	956	1074	1174	1126	1099	1097	1041	847	686	682	747	904	1049	1064	1045	1027	1017	942	858	939	1050	1105	1132	1125	1105	1043	875	713
751	744	830	957	1012	947	877	913	1027	1121	1129	1132	1102	1054	965	817	729	731	829	975	1067	1074	1071	1071	1053	1001	918	932	1022	1098	1133	1139	1118	1090	980	838
893	832	828	865	916	946	985	1060	1138	1195	1196	1175	1104	1014	923	846	842	906	1001	1083	1149	1162	1159	1152	1141	1100	1062	1038	1055	1105	1149	1169	1140	1129	1090	999
1141	1077	1030	1002	1005	1037	1084	1139	1167	1192	1183	1153	1115	1062	1060	1080	1132	1179	1239	1278	1310	1315	1318	1320	1315	1300	1280	1265	1247	1249	1257	1272	1271	1267	1258	1207
412	402	399	398	392	388	389	389	393	397	399	401	402	401	407	422	430	440	453	462	468	477	473	472	470	464	461	459	455	454	455	453	450	444	436	422

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : HIRS8 channel (Surface)

NOAA-15, USING ALL OBSERVATIONS

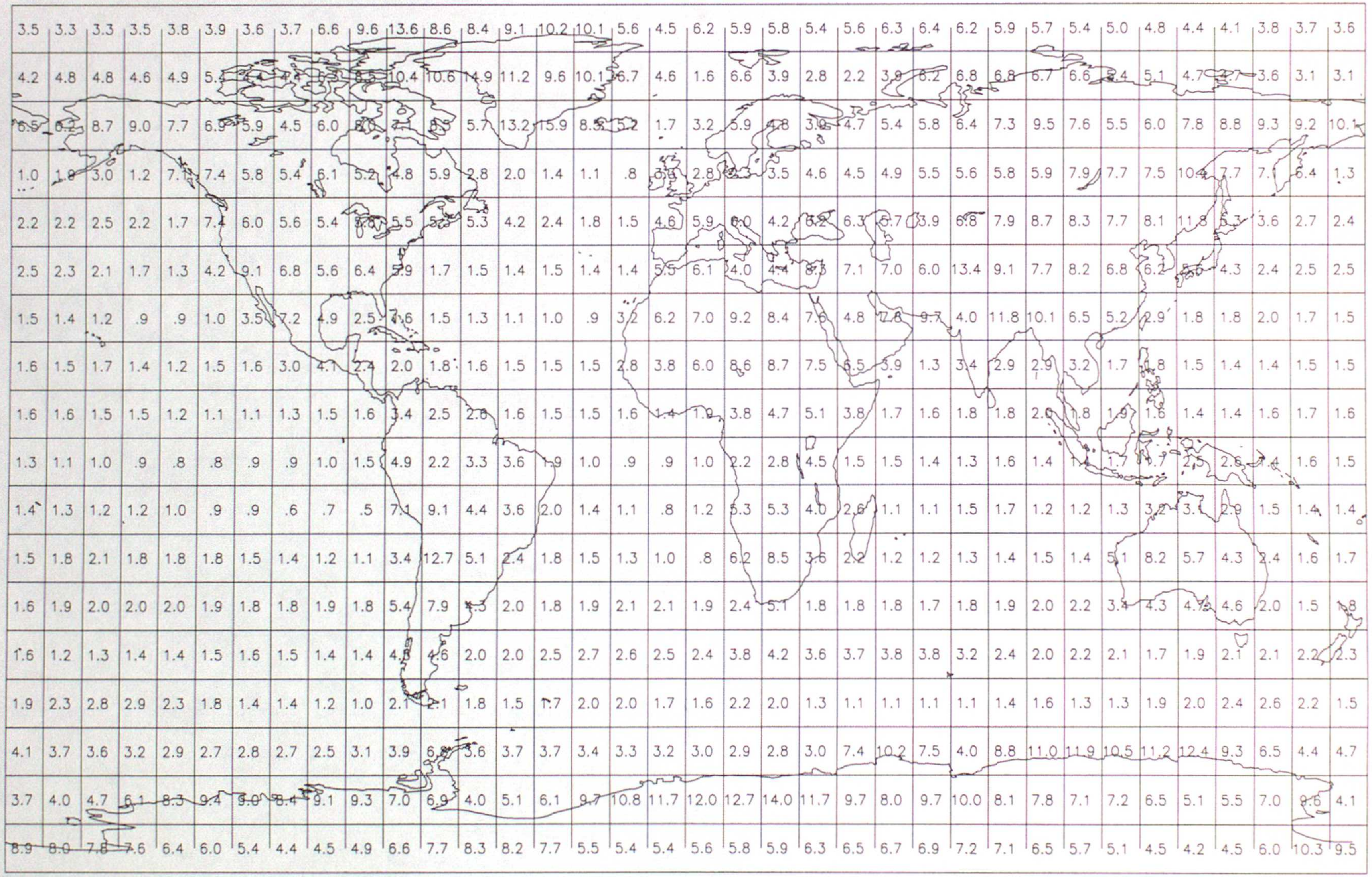
FIGURE 26



15.7	17.0	17.8	18.1	18.2	18.4	18.6	18.4	19.5	23.0	29.2	21.2	20.1	22.1	25.9	20.7	14.3	11.4	7.1	5.5	5.2	6.6	7.8	7.6	10.4	12.3	13.9	14.6	15.0	15.5	15.7	16.3	16.5	16.6	16.5	15.8
14.9	14.9	15.1	15.9	16.4	16.2	17.2	16.0	16.8	19.3	15.5	10.7	17.7	33.9	35.7	20.7	14.7	-1.3	-5.6	-3.6	-3.2	-3.3	-2.7	-.3	3.9	8.9	12.7	14.7	15.8	16.2	16.5	15.5	15.4	16.0	16.1	15.5
1.8	1.8	9.0	12.7	12.2	10.7	11.1	14.7	13.8	7.6	5.7	4.9	-.2	16.8	4.3	-3.2	-4.9	-7.9	-8.5	-2.6	-7.5	-1.2	-.1	3.3	7.6	10.7	15.1	23.0	22.6	22.8	23.7	30.2	29.8	22.1	19.0	12.0
-6.4	-5.9	-6.6	-8.6	-6.3	4.8	6.4	8.4	5.9	.8	1.5	2.6	-3.9	-7.3	-8.9	-10.9	-11.6	-8.9	-9.4	-8.1	-6.5	-2.1	1.2	2.9	4.7	7.1	11.0	15.1	15.4	21.3	21.0	19.4	.0	-.2	-2.3	-5.5
-10.1	-11.0	-12.1	-13.0	-13.5	-6.9	7.7	8.3	2.0	[illegible]	-3.7	-8.7	-11.6	-15.1	-16.9	-15.8	-14.9	-10.7	-8.9	-10.8	-11.0	-9.5	-2.8	-3.1	.4	6.5	8.6	10.8	8.5	7.8	6.6	.5	-7.4	-8.4	-9.4	-9.7
-18.8	-19.4	-19.7	-19.5	-18.3	-15.3	-3.5	.2	-6.2	-8.7	-17.8	-20.7	-21.5	-21.8	-21.8	-20.6	-19.4	-11.7	-14.8	-20.5	-20.2	-12.8	-5.6	-2.7	.4	5.4	11.9	11.7	-2.2	-9.3	-14.3	-16.7	-19.5	-19.8	-19.3	-18.7
-23.8	-23.8	-23.1	-21.9	-20.9	-20.5	-20.8	-12.9	-21.1	-23.7	-24.4	-24.5	-24.3	-23.6	-23.2	-22.6	-19.6	-17.4	-16.7	-21.8	-20.7	-18.1	-13.9	-17.2	-18.5	-17.2	-13.8	-13.3	-13.2	-16.8	-21.6	-24.1	-24.8	-24.5	-24.3	-24.3
-24.6	-24.1	-22.8	-21.8	-21.7	-22.3	-22.9	-23.5	-22.4	-23.9	-25.2	-24.4	-24.1	-23.6	-23.3	-24.2	-23.6	-23.5	-22.4	-26.8	-26.2	-23.3	-19.7	-23.9	-26.7	-23.6	-25.3	-25.0	-22.0	-23.2	-23.8	-25.1	-25.5	-25.4	-25.1	-24.9
-24.0	-24.0	-23.7	-23.4	-23.1	-22.7	-22.6	-22.3	-22.4	-22.3	-20.6	-21.7	-23.6	-23.5	-23.0	-23.1	-23.4	-23.2	-23.4	-22.2	-22.3	-18.6	-21.4	-24.1	-24.0	-24.1	-23.9	-23.2	-23.2	-22.8	-22.6	-23.5	-23.8	-24.1	-24.1	-24.3
-25.4	-25.3	-25.2	-24.8	-24.5	-23.9	-23.2	-22.3	-21.4	-20.3	-20.5	-22.6	-23.7	-24.7	-24.3	-23.8	-23.1	-22.4	-23.0	-21.6	-19.0	-20.1	-23.8	-23.6	-23.1	-22.9	-23.0	-22.8	-22.8	-23.1	-24.5	-24.4	-23.0	-24.2	-24.5	-25.4
-23.5	-23.9	-24.5	-24.2	-24.3	-24.2	-23.6	-22.8	-21.6	-20.2	-16.9	-19.0	-23.9	-21.4	-23.2	-22.9	-22.4	-21.3	-21.2	-20.6	-21.1	-21.5	-22.1	-23.3	-23.2	-22.5	-22.8	-23.8	-24.2	-25.1	-26.0	-25.4	-23.9	-23.7	-23.0	-23.2
-21.0	-21.0	-21.9	-22.3	-22.0	-22.0	-21.5	-21.1	-20.4	-19.2	-18.2	-14.2	-21.8	-20.5	-21.3	-20.9	-20.9	-20.1	-19.4	-16.9	-18.7	-22.0	-21.8	-22.1	-21.4	-20.8	-20.6	-20.9	-21.5	-21.6	-24.6	-24.9	-22.8	-21.2	-21.2	-21.2
-16.7	-16.3	-16.3	-15.9	-16.0	-16.1	-16.4	-16.4	-15.9	-15.6	-13.6	-14.5	-16.6	-17.7	-16.8	-16.6	-16.5	-16.5	-16.5	-17.8	-17.7	-19.6	-18.8	-17.8	-16.6	-15.6	-15.1	-15.1	-16.1	-16.9	-17.5	-18.2	-18.1	-18.3	-17.5	-16.8
-12.6	-11.9	-11.2	-11.0	-10.9	-10.9	-10.8	-10.8	-10.5	-10.7	-8.4	-9.8	-10.4	-10.8	-9.7	-9.4	-8.9	-8.1	-8.1	-9.6	-10.1	-9.9	-8.7	-8.8	-9.3	-8.8	-9.2	-9.5	-9.6	-10.6	-11.4	-12.1	-13.0	-13.1	-12.8	-11.9
-7.1	-6.4	-5.4	-5.4	-6.0	-6.3	-6.4	-6.7	-6.9	-7.1	-6.6	-6.2	-5.2	-3.6	-2.3	-1.9	-1.9	-1.3	-1.3	-.8	-1.1	-2.1	-1.7	-2.0	-2.3	-1.9	-2.5	-2.9	-2.7	-3.3	-4.4	-4.8	-4.5	-5.7	-7.0	-7.3
2.0	2.7	2.7	2.4	1.4	.2	-.5	-.8	-1.0	-.8	-.1	2.7	2.6	4.0	3.8	4.0	3.7	4.4	3.8	3.7	3.3	3.0	5.4	8.5	6.2	3.9	7.0	9.2	9.6	7.5	7.4	8.9	5.8	3.9	2.9	2.4
4.9	6.1	7.5	9.4	11.7	12.4	11.2	9.9	13.1	12.9	10.6	12.7	6.8	7.8	7.7	11.8	16.8	26.0	30.6	33.0	33.1	35.6	37.9	35.3	26.2	28.2	36.7	41.5	41.0	40.5	39.5	36.3	33.1	27.8	13.4	5.3
13.4	12.3	12.0	15.3	17.6	19.0	21.7	25.9	26.8	22.6	17.8	15.4	16.8	18.5	21.6	25.2	28.1	31.0	32.9	33.9	34.4	36.0	38.1	39.3	40.3	41.1	40.6	39.3	37.4	35.7	34.2	32.3	30.1	25.8	16.7	14.0

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
NOVEMBER 2000 : HIRS8 channel (Surface)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 27

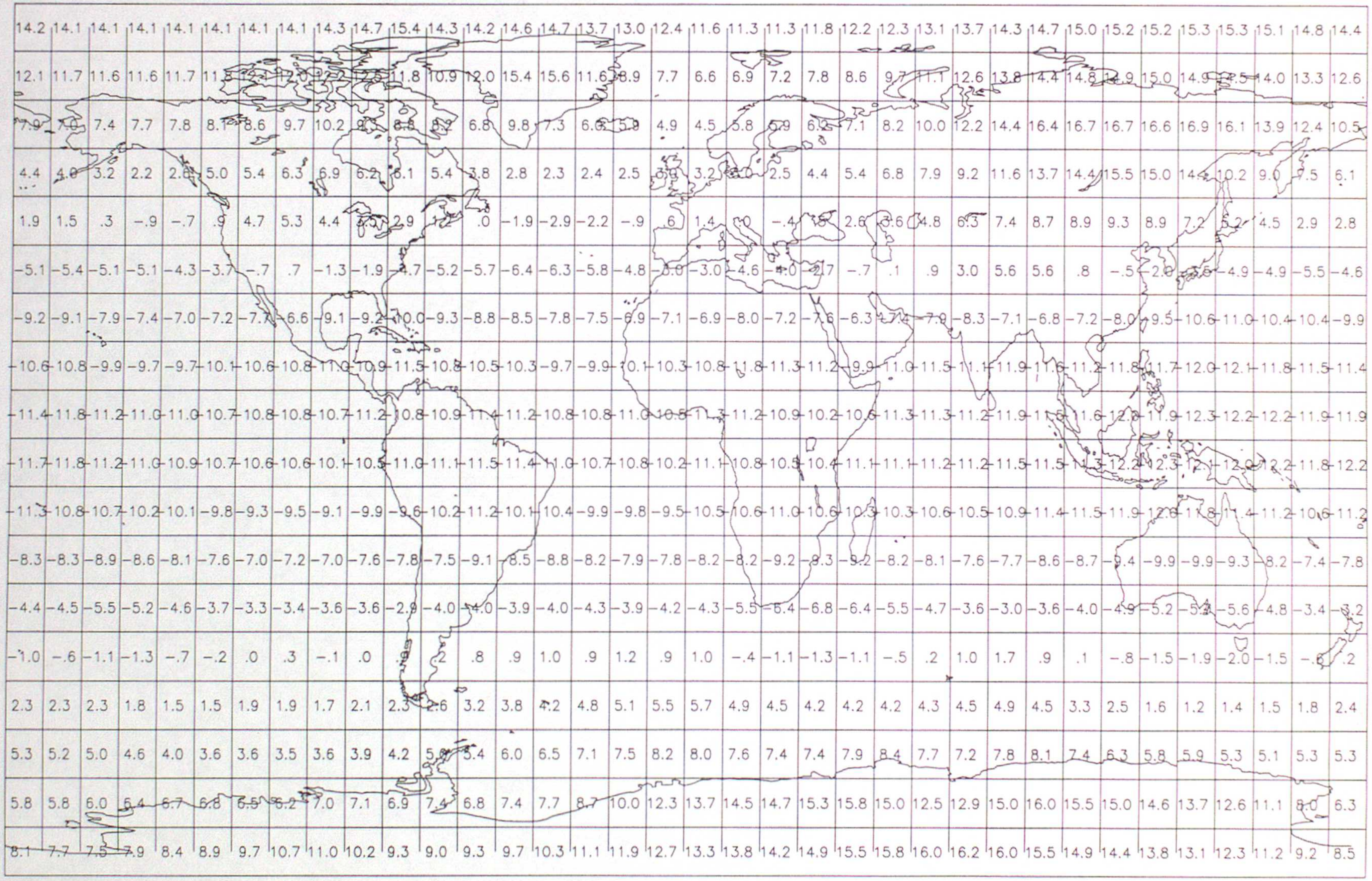

3.5 3.3 3.3 3.5 3.8 3.9 3.6 3.7 6.6 9.6 13.6 8.6 8.4 9.1 10.2 10.1 5.6 4.5 6.2 5.9 5.8 5.4 5.6 6.3 6.4 6.2 5.9 5.7 5.4 5.0 4.8 4.4 4.1 3.8 3.7 3.6
4.2 4.8 4.8 4.6 4.9 5.4 4.4 4.4 8.5 10.4 10.6 14.9 11.2 9.6 10.1 6.7 4.6 1.6 6.6 3.9 2.8 2.2 3.9 6.2 6.8 6.8 6.7 6.6 5.4 5.1 4.7 4.7 3.6 3.1 3.1
6.5 6.2 8.7 9.0 7.7 6.9 5.9 4.5 6.0 8.0 7.1 8.5 5.7 13.2 15.9 8.5 5.2 1.7 3.2 5.9 4.8 3.9 4.7 5.4 5.8 6.4 7.3 9.5 7.6 5.5 6.0 7.8 8.8 9.3 9.2 10.1
1.0 1.8 3.0 1.2 7.1 7.4 5.8 5.4 6.1 5.2 4.8 5.9 2.8 2.0 1.4 1.1 .8 3.8 2.8 2.3 3.5 4.6 4.5 4.9 5.5 5.6 5.8 5.9 7.9 7.7 7.5 10.4 7.7 7.1 6.4 1.3
2.2 2.2 2.5 2.2 1.7 7.4 6.0 5.6 5.4 5.8 5.5 5.3 5.3 4.2 2.4 1.8 1.5 4.6 5.9 6.0 4.2 6.2 6.3 5.7 3.9 6.8 7.9 8.7 8.3 7.7 8.1 11.8 5.3 3.6 2.7 2.4
2.5 2.3 2.1 1.7 1.3 4.2 9.1 6.8 5.6 6.4 5.9 1.7 1.5 1.4 1.5 1.4 1.4 5.5 6.1 4.0 4.4 8.3 7.1 7.0 6.0 13.4 9.1 7.7 8.2 6.8 6.2 5.6 4.3 2.4 2.5 2.5
1.5 1.4 1.2 .9 .9 1.0 3.5 7.2 4.9 2.5 7.6 1.5 1.3 1.1 1.0 .9 3.2 6.2 7.0 9.2 8.4 7.6 4.8 7.8 9.7 4.0 11.8 10.1 6.5 5.2 2.9 1.8 1.8 2.0 1.7 1.5
1.6 1.5 1.7 1.4 1.2 1.5 1.6 3.0 4.1 2.4 2.0 1.8 1.6 1.5 1.5 1.5 2.8 3.8 6.0 8.6 8.7 7.5 6.5 3.9 1.3 3.4 2.9 2.9 3.2 1.7 1.8 1.5 1.4 1.4 1.5 1.5
1.6 1.6 1.5 1.5 1.2 1.1 1.1 1.3 1.5 1.6 3.4 2.5 2.8 1.6 1.5 1.5 1.6 1.4 1.9 3.8 4.7 5.1 3.8 1.7 1.6 1.8 1.8 2.0 1.8 1.9 1.6 1.4 1.4 1.6 1.7 1.6
1.3 1.1 1.0 .9 .8 .8 .9 .9 1.0 1.5 4.9 2.2 3.3 3.6 1.9 1.0 .9 .9 1.0 2.2 2.8 4.5 1.5 1.5 1.4 1.3 1.6 1.4 1.4 1.7 1.7 2.5 2.6 1.4 1.6 1.5
1.4 1.3 1.2 1.2 1.0 .9 .9 .6 .7 .5 7.1 9.1 4.4 3.6 2.0 1.4 1.1 .8 1.2 5.3 5.3 4.0 2.6 1.1 1.1 1.5 1.7 1.2 1.2 1.3 3.2 3.1 2.9 1.5 1.4 1.4
1.5 1.8 2.1 1.8 1.8 1.8 1.5 1.4 1.2 1.1 3.4 12.7 5.1 2.4 1.8 1.5 1.3 1.0 .8 6.2 8.5 3.6 2.2 1.2 1.2 1.3 1.4 1.5 1.4 5.1 8.2 5.7 4.3 2.4 1.6 1.7
1.6 1.9 2.0 2.0 2.0 1.9 1.8 1.8 1.9 1.8 5.4 7.9 4.3 2.0 1.8 1.9 2.1 2.1 1.9 2.4 5.1 1.8 1.8 1.8 1.7 1.8 1.9 2.0 2.2 3.4 4.3 4.7 4.6 2.0 1.5 1.8
1.6 1.2 1.3 1.4 1.4 1.5 1.6 1.5 1.4 1.4 4.8 4.6 2.0 2.0 2.5 2.7 2.6 2.5 2.4 3.8 4.2 3.6 3.7 3.8 3.8 3.2 2.4 2.0 2.2 2.1 1.7 1.9 2.1 2.1 2.2 2.3
1.9 2.3 2.8 2.9 2.3 1.8 1.4 1.4 1.2 1.0 2.1 2.1 1.8 1.5 1.7 2.0 2.0 1.7 1.6 2.2 2.0 1.3 1.1 1.1 1.1 1.1 1.4 1.6 1.3 1.3 1.9 2.0 2.4 2.6 2.2 1.5
4.1 3.7 3.6 3.2 2.9 2.7 2.8 2.7 2.5 3.1 3.9 6.8 3.6 3.7 3.7 3.4 3.3 3.2 3.0 2.9 2.8 3.0 7.4 10.2 7.5 4.0 8.8 11.0 11.9 10.5 11.2 12.4 9.3 6.5 4.4 4.7
3.7 4.0 4.7 6.1 8.3 9.4 9.0 8.4 9.1 9.3 7.0 6.9 4.0 5.1 6.1 9.7 10.8 11.7 12.0 12.7 14.0 11.7 9.7 8.0 9.7 10.0 8.1 7.8 7.1 7.2 6.5 5.1 5.5 7.0 9.6 4.1
8.9 8.0 7.8 7.6 6.4 6.0 5.4 4.4 4.5 4.9 6.6 7.7 8.3 8.2 7.7 5.5 5.4 5.4 5.6 5.8 5.9 6.3 6.5 6.7 6.9 7.2 7.1 6.5 5.7 5.1 4.5 4.2 4.5 6.0 10.3 9.5

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : HIRS15 Channel (700 hPa)

NOAA−15, USING ALL OBSERVATIONS

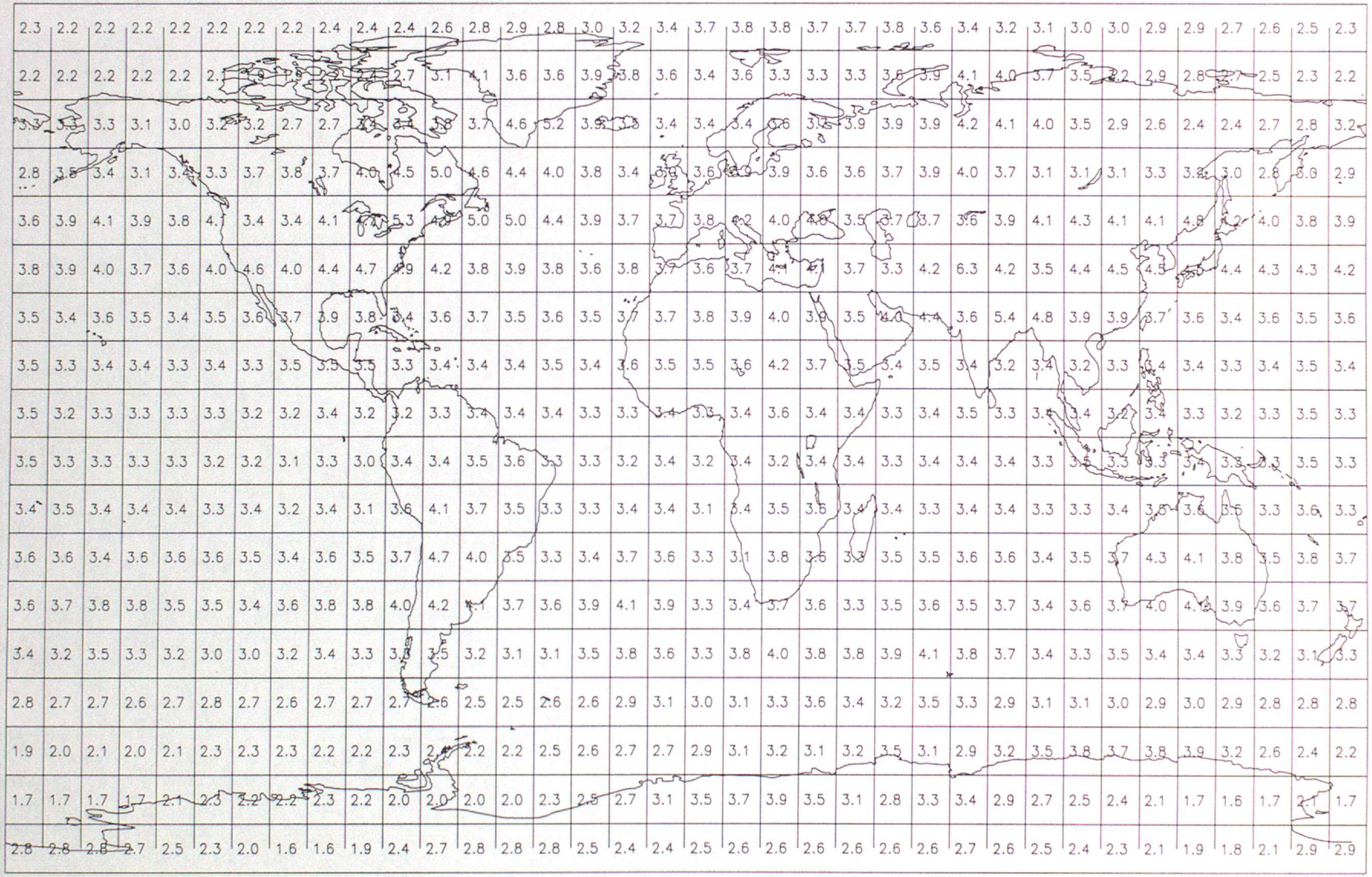
FIGURE 28



14.2	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.3	14.7	15.4	14.3	14.2	14.6	14.7	13.7	13.0	12.4	11.6	11.3	11.3	11.8	12.2	12.3	13.1	13.7	14.3	14.7	15.0	15.2	15.2	15.3	15.3	15.1	14.8	14.4
12.1	11.7	11.6	11.6	11.7	11.8	12.1	12.0	12.2	12.5	11.8	10.9	12.0	15.4	15.6	11.6	8.9	7.7	6.6	6.9	7.2	7.8	8.6	9.7	11.1	12.6	13.8	14.4	14.8	14.9	15.0	14.9	14.5	14.0	13.3	12.6
7.9	7.0	7.4	7.7	7.8	8.1	8.6	9.7	10.2	9.3	8.8	8.2	6.8	9.8	7.3	6.6	5.9	4.9	4.5	5.8	5.9	6.2	7.1	8.2	10.0	12.2	14.4	16.4	16.7	16.7	16.6	16.9	16.1	13.9	12.4	10.5
4.4	4.0	3.2	2.2	2.6	5.0	5.4	6.3	6.9	6.2	6.1	5.4	3.8	2.8	2.3	2.4	2.5	3.9	3.2	3.0	2.5	4.4	5.4	6.8	7.9	9.2	11.6	13.7	14.4	15.5	15.0	14.4	10.2	9.0	7.5	6.1
1.9	1.5	.3	−.9	−.7	.9	4.7	5.3	4.4	3.5	2.9	1.2	.0	−1.9	−2.9	−2.2	−.9	.6	1.4	.0	−.4	1.5	2.6	3.6	4.8	6.3	7.4	8.7	8.9	9.3	8.9	7.2	5.2	4.5	2.9	2.8
−5.1	−5.4	−5.1	−5.1	−4.3	−3.7	−.7	.7	−1.3	−1.9	−4.7	−5.2	−5.7	−6.4	−6.3	−5.8	−4.8	−3.0	−3.0	−4.6	−4.0	−2.7	−.7	.1	.9	3.0	5.6	5.6	.8	−.5	−2.0	−3.5	−4.9	−4.9	−5.5	−4.6
−9.2	−9.1	−7.9	−7.4	−7.0	−7.2	−7.7	−6.6	−9.1	−9.2	−10.0	−9.3	−8.8	−8.5	−7.8	−7.5	−6.9	−7.1	−6.9	−8.0	−7.2	−7.6	−6.3	−7.4	−7.9	−8.3	−7.1	−6.8	−7.2	−8.0	−9.5	−10.6	−11.0	−10.4	−10.4	−9.9
−10.6	−10.8	−9.9	−9.7	−9.7	−10.1	−10.6	−10.8	−11.0	−10.9	−11.5	−10.8	−10.5	−10.3	−9.7	−9.9	−10.1	−10.3	−10.8	−11.8	−11.3	−11.2	−9.9	−11.0	−11.5	−11.1	−11.9	−11.6	−11.2	−11.8	−11.7	−12.0	−12.1	−11.8	−11.5	−11.4
−11.4	−11.8	−11.2	−11.0	−11.0	−10.7	−10.8	−10.8	−10.7	−11.2	−10.8	−10.9	−11.4	−11.2	−10.8	−10.8	−11.0	−10.5	−11.3	−11.2	−10.9	−10.2	−10.6	−11.3	−11.3	−11.2	−11.9	−11.5	−11.6	−12.0	−11.9	−12.3	−12.2	−12.2	−11.9	−11.9
−11.7	−11.8	−11.2	−11.0	−10.9	−10.7	−10.6	−10.6	−10.1	−10.5	−11.0	−11.1	−11.5	−11.4	−11.0	−10.7	−10.8	−10.2	−11.1	−10.8	−10.5	−10.4	−11.1	−11.1	−11.2	−11.2	−11.5	−11.5	−11.3	−12.2	−12.3	−12.1	−12.0	−12.2	−11.8	−12.2
−11.3	−10.8	−10.7	−10.2	−10.1	−9.8	−9.3	−9.5	−9.1	−9.9	−9.6	−10.2	−11.2	−10.1	−10.4	−9.9	−9.8	−9.5	−10.5	−10.6	−11.0	−10.6	−10.3	−10.3	−10.6	−10.5	−10.9	−11.4	−11.5	−11.9	−12.6	−11.8	−11.4	−11.2	−10.6	−11.2
−8.3	−8.3	−8.9	−8.6	−8.1	−7.6	−7.0	−7.2	−7.0	−7.6	−7.8	−7.5	−9.1	−8.5	−8.8	−8.2	−7.9	−7.8	−8.2	−8.2	−9.2	−8.3	−9.2	−8.2	−8.1	−7.6	−7.7	−8.6	−8.7	−9.4	−9.9	−9.9	−9.3	−8.2	−7.4	−7.8
−4.4	−4.5	−5.5	−5.2	−4.6	−3.7	−3.3	−3.4	−3.6	−3.6	−2.9	−4.0	−4.0	−3.9	−4.0	−4.3	−3.9	−4.2	−4.3	−5.5	−6.4	−6.8	−6.4	−5.5	−4.7	−3.6	−3.0	−3.6	−4.0	−4.9	−5.2	−5.4	−5.6	−4.8	−3.4	−3.2
−1.0	−.6	−1.1	−1.3	−.7	−.2	.0	.3	−.1	.0	.9	.2	.8	.9	1.0	.9	1.2	.9	1.0	−.4	−1.1	−1.3	−1.1	−.5	.2	1.0	1.7	.9	.1	−.8	−1.5	−1.9	−2.0	−1.5	−.6	.2
2.3	2.3	2.3	1.8	1.5	1.5	1.9	1.9	1.7	2.1	2.3	2.6	3.2	3.8	4.2	4.8	5.1	5.5	5.7	4.9	4.5	4.2	4.2	4.2	4.3	4.5	4.9	4.5	3.3	2.5	1.6	1.2	1.4	1.5	1.8	2.4
5.3	5.2	5.0	4.6	4.0	3.6	3.6	3.5	3.6	3.9	4.2	5.8	5.4	6.0	6.5	7.1	7.5	8.2	8.0	7.6	7.4	7.4	7.9	8.4	7.7	7.2	7.8	8.1	7.4	6.3	5.8	5.9	5.3	5.1	5.3	5.3
5.8	5.8	6.0	6.4	6.7	6.8	6.5	6.2	7.0	7.1	6.9	7.4	6.8	7.4	7.7	8.7	10.0	12.3	13.7	14.5	14.7	15.3	15.8	15.0	12.5	12.9	15.0	16.0	15.5	15.0	14.6	13.7	12.6	11.1	8.0	6.3
8.1	7.7	7.5	7.9	8.4	8.9	9.7	10.7	11.0	10.2	9.3	9.0	9.3	9.7	10.3	11.1	11.9	12.7	13.3	13.8	14.2	14.9	15.5	15.8	16.0	16.2	16.0	15.5	14.9	14.4	13.8	13.1	12.3	11.2	9.2	8.5

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
NOVEMBER 2000 : HIRS15 channel (700 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 29



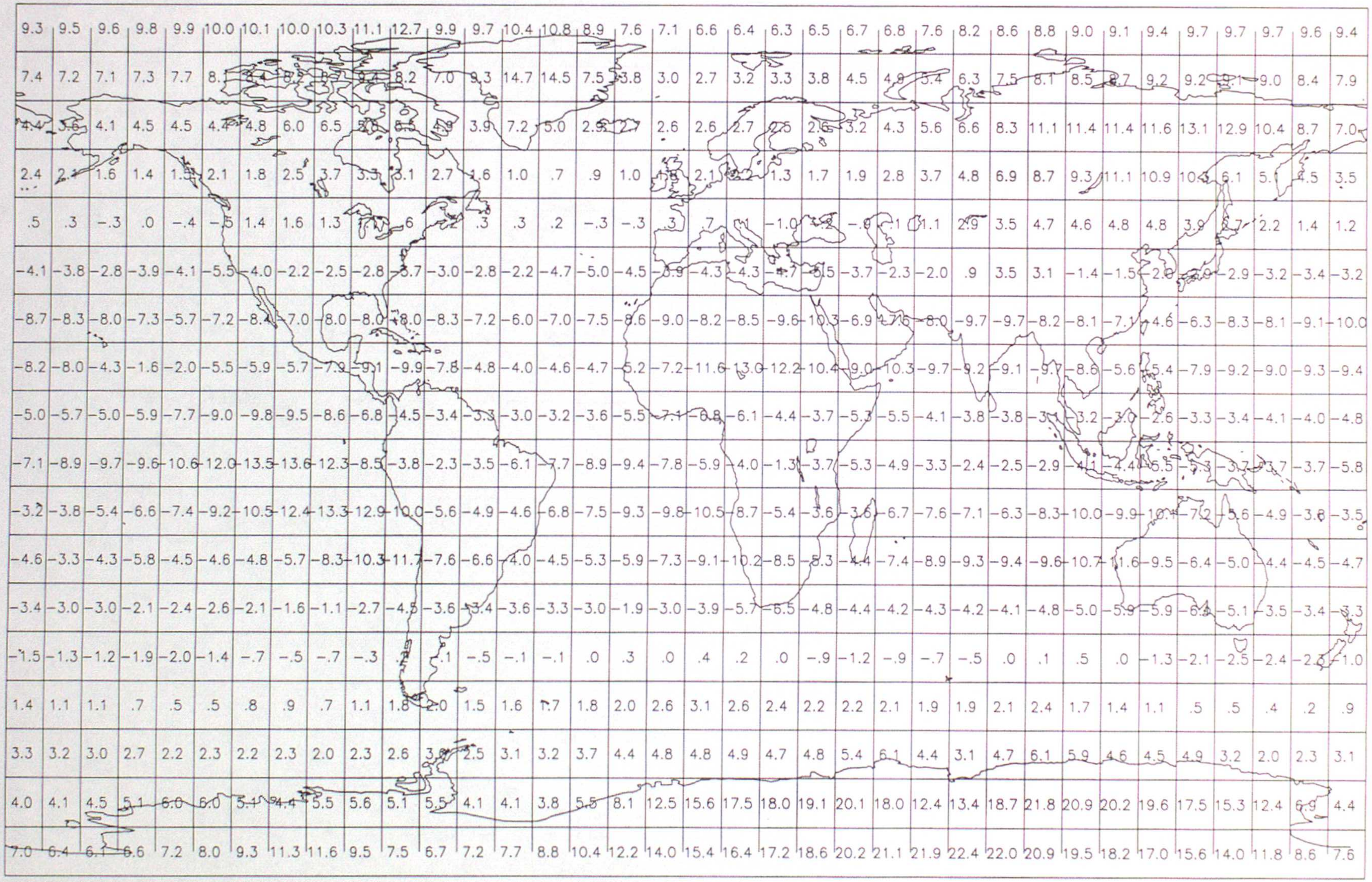
2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.4	2.4	2.6	2.8	2.9	2.8	3.0	3.2	3.4	3.7	3.8	3.8	3.7	3.7	3.8	3.6	3.4	3.2	3.1	3.0	3.0	2.9	2.9	2.7	2.6	2.5	2.3
2.2	2.2	2.2	2.2	2.2	2.1	1.9	1.9	[illegible]	2.4	2.7	3.1	4.1	3.6	3.6	3.9	3.8	3.6	3.4	3.6	3.3	3.3	3.3	3.6	3.9	4.1	4.0	3.7	3.5	2.2	2.9	2.8	2.7	2.5	2.3	2.2
3.3	3.3	3.3	3.1	3.0	3.2	3.2	2.7	2.7	3.4	3.4	3.8	3.7	4.6	5.2	3.9	3.5	3.4	3.4	3.4	3.6	3.5	3.9	3.9	3.9	4.2	4.1	4.0	3.5	2.9	2.6	2.4	2.4	2.7	2.8	3.2
2.8	3.5	3.4	3.1	3.4	3.3	3.7	3.8	3.7	4.0	4.5	5.0	4.6	4.4	4.0	3.8	3.4	3.9	3.6	3.9	3.9	3.6	3.6	3.7	3.9	4.0	3.7	3.1	3.1	3.1	3.3	3.2	3.0	2.8	3.0	2.9
3.6	3.9	4.1	3.9	3.8	4.1	3.4	3.4	4.1	4.7	5.3	4.9	5.0	5.0	4.4	3.9	3.7	3.7	3.8	4.2	4.0	4.0	3.5	3.7	3.7	3.6	3.9	4.1	4.3	4.1	4.1	4.8	4.2	4.0	3.8	3.9
3.8	3.9	4.0	3.7	3.6	4.0	4.6	4.0	4.4	4.7	4.9	4.2	3.8	3.9	3.8	3.6	3.8	3.7	3.6	3.7	4.1	4.1	3.7	3.3	4.2	6.3	4.2	3.5	4.4	4.5	4.5	4.5	4.4	4.3	4.3	4.2
3.5	3.4	3.6	3.5	3.4	3.5	3.6	3.7	3.9	3.8	3.4	3.6	3.7	3.5	3.6	3.5	3.7	3.7	3.8	3.9	4.0	3.9	3.5	4.0	4.4	3.6	5.4	4.8	3.9	3.9	3.7	3.6	3.4	3.6	3.5	3.6
3.5	3.3	3.4	3.4	3.3	3.4	3.3	3.5	3.5	3.5	3.3	3.4	3.4	3.4	3.5	3.4	3.6	3.5	3.5	3.6	4.2	3.7	3.5	3.4	3.5	3.4	3.2	3.4	3.2	3.3	3.4	3.4	3.3	3.4	3.5	3.4
3.5	3.2	3.3	3.3	3.3	3.3	3.2	3.2	3.4	3.2	3.2	3.3	3.4	3.4	3.4	3.3	3.3	3.4	3.3	3.4	3.6	3.4	3.4	3.3	3.4	3.5	3.3	3.4	3.4	3.2	3.4	3.3	3.2	3.3	3.5	3.3
3.5	3.3	3.3	3.3	3.3	3.2	3.2	3.1	3.3	3.0	3.4	3.4	3.5	3.6	3.3	3.3	3.2	3.4	3.2	3.4	3.2	3.4	3.4	3.3	3.4	3.4	3.4	3.3	3.5	3.3	3.3	3.4	3.3	3.3	3.5	3.3
3.4	3.5	3.4	3.4	3.4	3.3	3.4	3.2	3.4	3.1	3.6	4.1	3.7	3.5	3.3	3.3	3.4	3.4	3.1	3.4	3.5	3.6	3.4	3.4	3.3	3.4	3.4	3.3	3.3	3.4	3.5	3.6	3.5	3.3	3.6	3.3
3.6	3.6	3.4	3.6	3.6	3.6	3.5	3.4	3.6	3.5	3.7	4.7	4.0	3.5	3.3	3.4	3.7	3.6	3.3	3.1	3.8	3.6	3.3	3.5	3.5	3.6	3.6	3.4	3.5	3.7	4.3	4.1	3.8	3.5	3.8	3.7
3.6	3.7	3.8	3.8	3.5	3.5	3.4	3.6	3.8	3.8	4.0	4.2	4.1	3.7	3.6	3.9	4.1	3.9	3.3	3.4	3.7	3.6	3.3	3.5	3.6	3.5	3.7	3.4	3.6	3.7	4.0	4.1	3.9	3.6	3.7	3.7
3.4	3.2	3.5	3.3	3.2	3.0	3.0	3.2	3.4	3.3	3.3	3.5	3.2	3.1	3.1	3.5	3.8	3.6	3.3	3.8	4.0	3.8	3.8	3.9	4.1	3.8	3.7	3.4	3.3	3.5	3.4	3.4	3.3	3.2	3.1	3.3
2.8	2.7	2.7	2.6	2.7	2.8	2.7	2.6	2.7	2.7	2.7	2.6	2.5	2.5	2.6	2.6	2.9	3.1	3.0	3.1	3.3	3.6	3.4	3.2	3.5	3.3	2.9	3.1	3.1	3.0	2.9	3.0	2.9	2.8	2.8	2.8
1.9	2.0	2.1	2.0	2.1	2.3	2.3	2.3	2.2	2.2	2.3	2.4	2.2	2.2	2.5	2.6	2.7	2.7	2.9	3.1	3.2	3.1	3.2	3.5	3.1	2.9	3.2	3.5	3.8	3.7	3.8	3.9	3.2	2.6	2.4	2.2
1.7	1.7	1.7	1.7	2.1	2.3	2.2	2.2	2.3	2.2	2.0	2.0	2.0	2.0	2.3	2.5	2.7	3.1	3.5	3.7	3.9	3.5	3.1	2.8	3.3	3.4	2.9	2.7	2.5	2.4	2.1	1.7	1.6	1.7	2.1	1.7
2.8	2.8	2.8	2.7	2.5	2.3	2.0	1.6	1.6	1.9	2.4	2.7	2.8	2.8	2.8	2.5	2.4	2.4	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.5	2.4	2.3	2.1	1.9	1.8	2.1	2.9	2.9

ATOVS : MEAN O–B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : HIRS11 Channel (500–700 hPa)

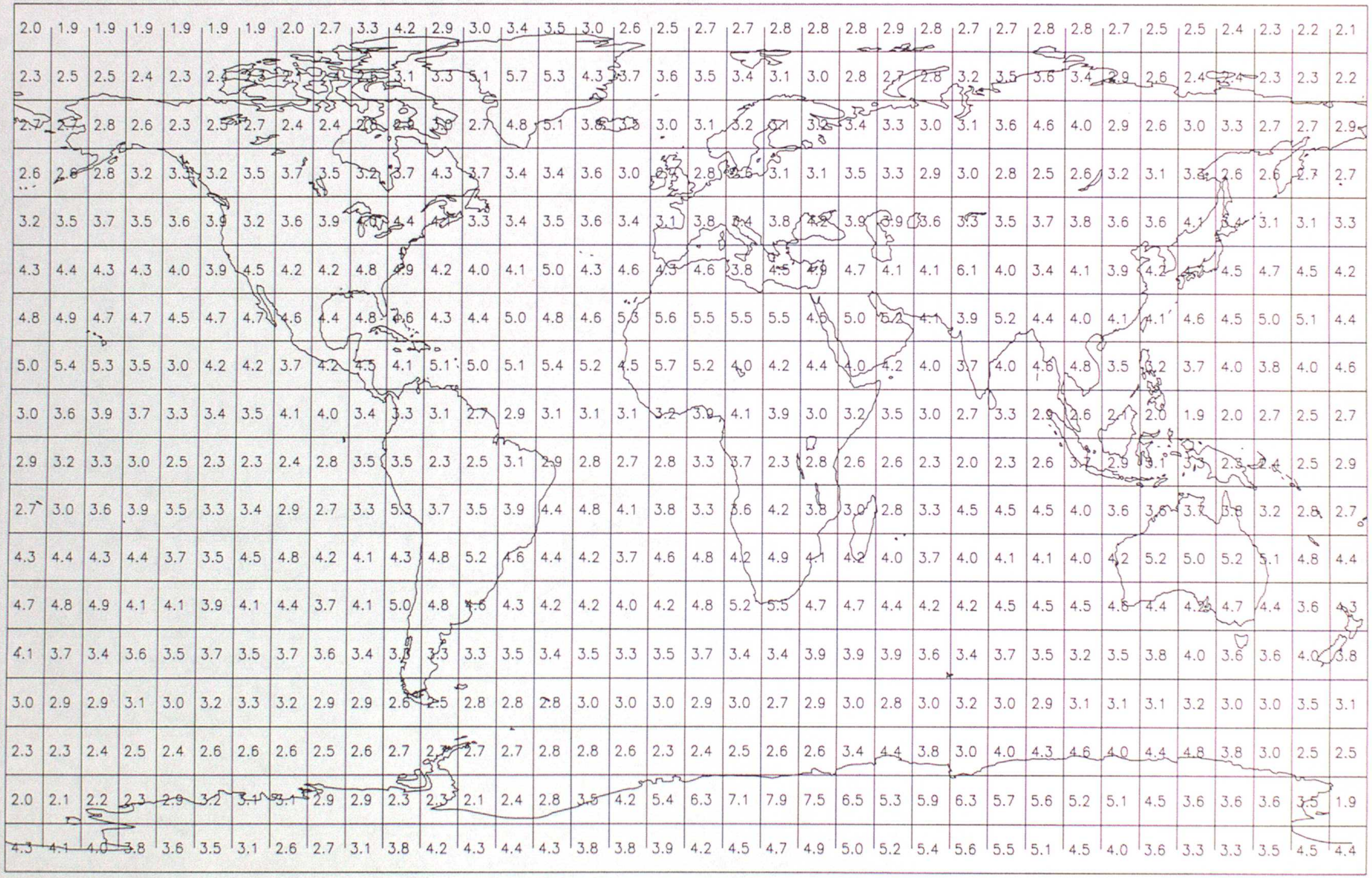
NOAA–15, USING ALL OBSERVATIONS

FIGURE 30



9.3	9.5	9.6	9.8	9.9	10.0	10.1	10.0	10.3	11.1	12.7	9.9	9.7	10.4	10.8	8.9	7.6	7.1	6.6	6.4	6.3	6.5	6.7	6.8	7.6	8.2	8.6	8.8	9.0	9.1	9.4	9.7	9.7	9.7	9.6	9.4
7.4	7.2	7.1	7.3	7.7	8.1	8.4	8.2	8.7	9.4	8.2	7.0	9.3	14.7	14.5	7.5	3.8	3.0	2.7	3.2	3.3	3.8	4.5	4.9	5.4	6.3	7.5	8.1	8.5	8.7	9.2	9.2	9.1	9.0	8.4	7.9
4.4	3.6	4.1	4.5	4.5	4.4	4.8	6.0	6.5	5.6	6.5	4.9	3.9	7.2	5.0	2.9	2.7	2.6	2.6	2.7	2.5	2.6	3.2	4.3	5.6	6.6	8.3	11.1	11.4	11.4	11.6	13.1	12.9	10.4	8.7	7.0
2.4	2.1	1.6	1.4	1.5	2.1	1.8	2.5	3.7	3.3	3.1	2.7	1.6	1.0	.7	.9	1.0	1.8	2.1	2.2	1.3	1.7	1.9	2.8	3.7	4.8	6.9	8.7	9.3	11.1	10.9	10.4	6.1	5.1	4.5	3.5
.5	.3	−.3	.0	−.4	−.5	1.4	1.6	1.3	1.1	.6	.2	.3	.3	.2	−.3	−.3	.3	.7	.1	−1.0	−.2	−.9	−.1	1.1	2.9	3.5	4.7	4.6	4.8	4.8	3.9	2.7	2.2	1.4	1.2
−4.1	−3.8	−2.8	−3.9	−4.1	−5.5	−4.0	−2.2	−2.5	−2.8	−3.7	−3.0	−2.8	−2.2	−4.7	−5.0	−4.5	−3.9	−4.3	−4.3	−4.7	−3.5	−3.7	−2.3	−2.0	.9	3.5	3.1	−1.4	−1.5	−2.0	−2.0	−2.9	−3.2	−3.4	−3.2
−8.7	−8.3	−8.0	−7.3	−5.7	−7.2	−8.4	−7.0	−8.0	−8.0	−8.0	−8.3	−7.2	−6.0	−7.0	−7.5	−8.6	−9.0	−8.2	−8.5	−9.6	−10.3	−6.9	−7.6	−8.0	−9.7	−9.7	−8.2	−8.1	−7.1	−4.6	−6.3	−8.3	−8.1	−9.1	−10.0
−8.2	−8.0	−4.3	−1.6	−2.0	−5.5	−5.9	−5.7	−7.9	−9.1	−9.9	−7.8	−4.8	−4.0	−4.6	−4.7	−5.2	−7.2	−11.6	−13.0	−12.2	−10.4	−9.0	−10.3	−9.7	−9.2	−9.1	−9.7	−8.6	−5.6	−5.4	−7.9	−9.2	−9.0	−9.3	−9.4
−5.0	−5.7	−5.0	−5.9	−7.7	−9.0	−9.8	−9.5	−8.6	−6.8	−4.5	−3.4	−3.3	−3.0	−3.2	−3.6	−5.5	−7.1	−6.8	−6.1	−4.4	−3.7	−5.3	−5.5	−4.1	−3.8	−3.8	−3.1	−3.2	−3.0	−2.6	−3.3	−3.4	−4.1	−4.0	−4.8
−7.1	−8.9	−9.7	−9.6	−10.6	−12.0	−13.5	−13.6	−12.3	−8.5	−3.8	−2.3	−3.5	−6.1	−7.7	−8.9	−9.4	−7.8	−5.9	−4.0	−1.3	−3.7	−5.3	−4.9	−3.3	−2.4	−2.5	−2.9	−4.1	−4.4	−5.5	−5.3	−3.7	−3.7	−3.7	−5.8
−3.2	−3.8	−5.4	−6.6	−7.4	−9.2	−10.5	−12.4	−13.3	−12.9	−10.0	−5.6	−4.9	−4.6	−6.8	−7.5	−9.3	−9.8	−10.5	−8.7	−5.4	−3.6	−3.6	−6.7	−7.6	−7.1	−6.3	−8.3	−10.0	−9.9	−10.1	−7.2	−5.6	−4.9	−3.6	−3.5
−4.6	−3.3	−4.3	−5.8	−4.5	−4.6	−4.8	−5.7	−8.3	−10.3	−11.7	−7.6	−6.6	−4.0	−4.5	−5.3	−5.9	−7.3	−9.1	−10.2	−8.5	−5.3	−4.4	−7.4	−8.9	−9.3	−9.4	−9.6	−10.7	−11.6	−9.5	−6.4	−5.0	−4.4	−4.5	−4.7
−3.4	−3.0	−3.0	−2.1	−2.4	−2.6	−2.1	−1.6	−1.1	−2.7	−4.5	−3.6	−3.4	−3.6	−3.3	−3.0	−1.9	−3.0	−3.9	−5.7	−6.5	−4.8	−4.4	−4.2	−4.3	−4.2	−4.1	−4.8	−5.0	−5.9	−5.9	−6.3	−5.1	−3.5	−3.4	−3.3
−1.5	−1.3	−1.2	−1.9	−2.0	−1.4	−.7	−.5	−.7	−.3	.2	.1	−.5	−.1	−.1	.0	.3	.0	.4	.2	.0	−.9	−1.2	−.9	−.7	−.5	.0	.1	.5	.0	−1.3	−2.1	−2.5	−2.4	−2.3	−1.0
1.4	1.1	1.1	.7	.5	.5	.8	.9	.7	1.1	1.8	2.0	1.5	1.6	1.7	1.8	2.0	2.6	3.1	2.6	2.4	2.2	2.2	2.1	1.9	1.9	2.1	2.4	1.7	1.4	1.1	.5	.5	.4	.2	.9
3.3	3.2	3.0	2.7	2.2	2.3	2.2	2.3	2.0	2.3	2.6	3.6	2.5	3.1	3.2	3.7	4.4	4.8	4.8	4.9	4.7	4.8	5.4	6.1	4.4	3.1	4.7	6.1	5.9	4.6	4.5	4.9	3.2	2.0	2.3	3.1
4.0	4.1	4.5	5.1	6.0	6.0	5.1	4.4	5.5	5.6	5.1	5.5	4.1	4.1	3.8	5.5	8.1	12.5	15.6	17.5	18.0	19.1	20.1	18.0	12.4	13.4	18.7	21.8	20.9	20.2	19.6	17.5	15.3	12.4	6.9	4.4
7.0	6.4	6.1	6.6	7.2	8.0	9.3	11.3	11.6	9.5	7.5	6.7	7.2	7.7	8.8	10.4	12.2	14.0	15.4	16.4	17.2	18.6	20.2	21.1	21.9	22.4	22.0	20.9	19.5	18.2	17.0	15.6	14.0	11.8	8.6	7.6

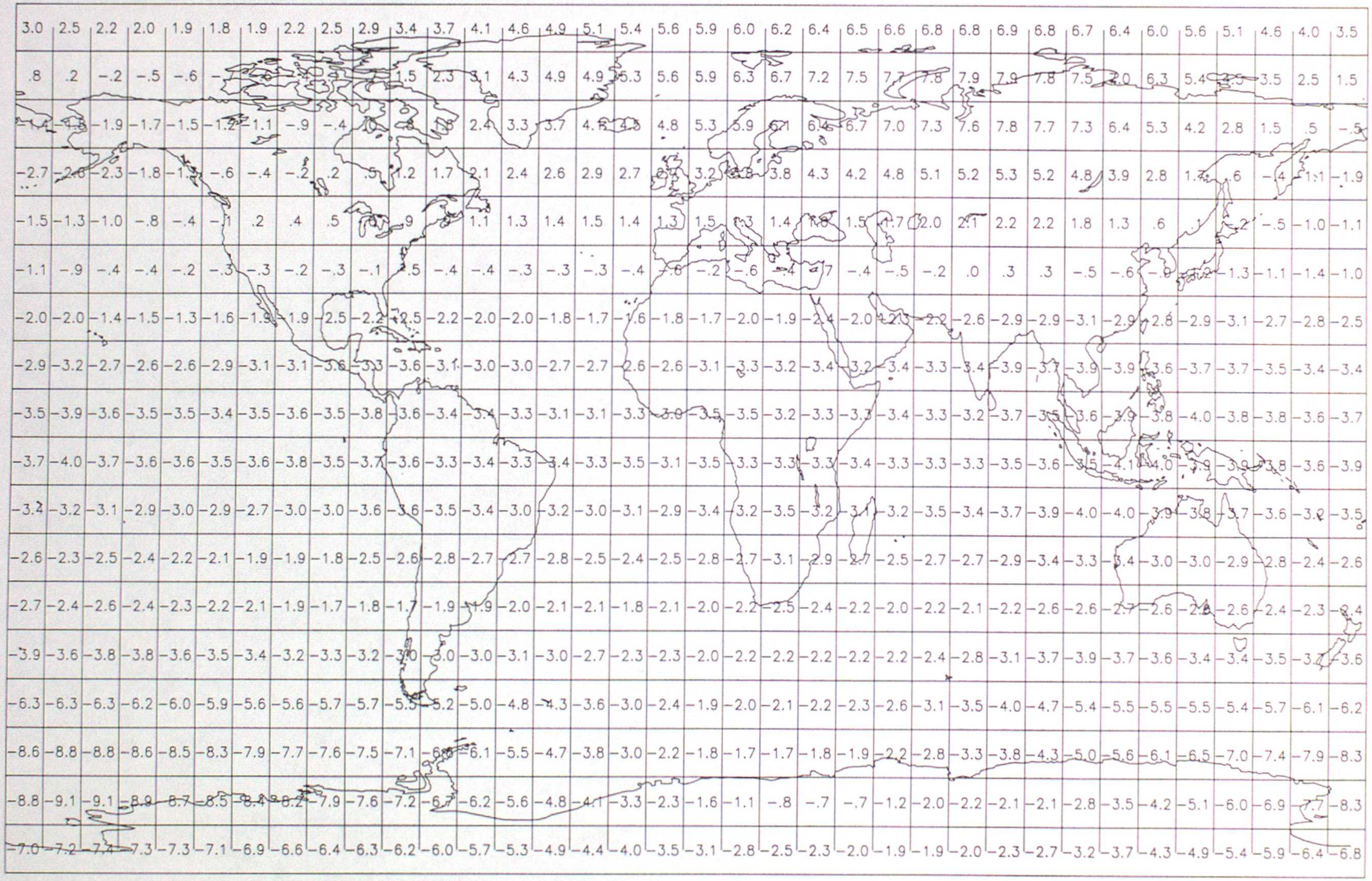
ATOVS : SD O–B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C) FIGURE 31
NOVEMBER 2000 : HIRS11 channel (500–700 hPa)
NOAA–15, USING ALL OBSERVATIONS



2.0	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.7	3.3	4.2	2.9	3.0	3.4	3.5	3.0	2.6	2.5	2.7	2.7	2.8	2.8	2.8	2.9	2.8	2.7	2.7	2.8	2.8	2.7	2.5	2.5	2.4	2.3	2.2	2.1
2.3	2.5	2.5	2.4	2.3	2.4	2.3	2.1	[illegible]	2.5	3.1	3.3	5.1	5.7	5.3	4.3	3.7	3.6	3.5	3.4	3.1	3.0	2.8	2.7	2.8	3.2	3.5	3.6	3.4	2.9	2.6	2.4	2.4	2.3	2.3	2.2
2.7	2.7	2.8	2.6	2.3	2.5	2.7	2.4	2.4	2.8	2.9	3.0	2.7	4.8	5.1	3.8	3.5	3.0	3.1	3.2	3.1	3.2	3.4	3.3	3.0	3.1	3.6	4.6	4.0	2.9	2.6	3.0	3.3	2.7	2.7	2.9
2.6	2.8	2.8	3.2	3.3	3.2	3.5	3.7	3.5	3.2	3.7	4.3	3.7	3.4	3.4	3.6	3.0	[illegible]	2.8	3.6	3.1	3.1	3.5	3.3	2.9	3.0	2.8	2.5	2.6	3.2	3.1	3.3	2.6	2.6	2.7	2.7
3.2	3.5	3.7	3.5	3.6	3.9	3.2	3.6	3.9	4.0	4.4	4.1	3.3	3.4	3.5	3.6	3.4	3.1	3.8	3.4	3.8	4.2	3.9	3.9	3.6	3.3	3.5	3.7	3.8	3.6	3.6	4.1	3.4	3.1	3.1	3.3
4.3	4.4	4.3	4.3	4.0	3.9	4.5	4.2	4.2	4.8	4.9	4.2	4.0	4.1	5.0	4.3	4.6	4.3	4.6	3.8	4.5	4.9	4.7	4.1	4.1	6.1	4.0	3.4	4.1	3.9	4.2	[illegible]	4.5	4.7	4.5	4.2
4.8	4.9	4.7	4.7	4.5	4.7	4.7	4.6	4.4	4.8	4.6	4.3	4.4	5.0	4.8	4.6	5.3	5.6	5.5	5.5	5.5	4.5	5.0	5.2	4.1	3.9	5.2	4.4	4.0	4.1	4.1	4.6	4.5	5.0	5.1	4.4
5.0	5.4	5.3	3.5	3.0	4.2	4.2	3.7	4.2	4.5	4.1	5.1	5.0	5.1	5.4	5.2	4.5	5.7	5.2	4.0	4.2	4.4	4.0	4.2	4.0	3.7	4.0	4.6	4.8	3.5	3.2	3.7	4.0	3.8	4.0	4.6
3.0	3.6	3.9	3.7	3.3	3.4	3.5	4.1	4.0	3.4	3.3	3.1	2.7	2.9	3.1	3.1	3.1	3.2	3.9	4.1	3.9	3.0	3.2	3.5	3.0	2.7	3.3	2.9	2.6	2.1	2.0	1.9	2.0	2.7	2.5	2.7
2.9	3.2	3.3	3.0	2.5	2.3	2.3	2.4	2.8	3.5	3.5	2.3	2.5	3.1	2.9	2.8	2.7	2.8	3.3	3.7	2.3	2.8	2.6	2.6	2.3	2.0	2.3	2.6	3.7	2.9	3.1	3.3	2.3	2.4	2.5	2.9
2.7	3.0	3.6	3.9	3.5	3.3	3.4	2.9	2.7	3.3	5.3	3.7	3.5	3.9	4.4	4.8	4.1	3.8	3.3	3.6	4.2	3.8	3.0	2.8	3.3	4.5	4.5	4.5	4.0	3.6	3.6	3.7	3.8	3.2	2.8	2.7
4.3	4.4	4.3	4.4	3.7	3.5	4.5	4.8	4.2	4.1	4.3	4.8	5.2	4.6	4.4	4.2	3.7	4.6	4.8	4.2	4.9	4.1	4.2	4.0	3.7	4.0	4.1	4.1	4.0	4.2	5.2	5.0	5.2	5.1	4.8	4.4
4.7	4.8	4.9	4.1	4.1	3.9	4.1	4.4	3.7	4.1	5.0	4.8	4.6	4.3	4.2	4.2	4.0	4.2	4.8	5.2	5.5	4.7	4.7	4.4	4.2	4.2	4.5	4.5	4.5	4.6	4.4	4.2	4.7	4.4	3.6	4.3
4.1	3.7	3.4	3.6	3.5	3.7	3.5	3.7	3.6	3.4	3.3	3.3	3.3	3.5	3.4	3.5	3.3	3.5	3.7	3.4	3.4	3.9	3.9	3.9	3.6	3.4	3.7	3.5	3.2	3.5	3.8	4.0	3.6	3.6	4.0	3.8
3.0	2.9	2.9	3.1	3.0	3.2	3.3	3.2	2.9	2.9	2.6	2.5	2.8	2.8	2.8	3.0	3.0	3.0	2.9	3.0	2.7	2.9	3.0	2.8	3.0	3.2	3.0	2.9	3.1	3.1	3.1	3.2	3.0	3.0	3.5	3.1
2.3	2.3	2.4	2.5	2.4	2.6	2.6	2.6	2.5	2.6	2.7	2.7	2.7	2.7	2.8	2.8	2.6	2.3	2.4	2.5	2.6	2.6	3.4	4.4	3.8	3.0	4.0	4.3	4.6	4.0	4.4	4.8	3.8	3.0	2.5	2.5
2.0	2.1	2.2	2.3	2.9	3.2	3.1	3.1	2.9	2.9	2.3	2.3	2.1	2.4	2.8	3.5	4.2	5.4	6.3	7.1	7.9	7.5	6.5	5.3	5.9	6.3	5.7	5.6	5.2	5.1	4.5	3.6	3.6	3.6	3.5	1.9
4.3	4.1	4.0	3.8	3.6	3.5	3.1	2.6	2.7	3.1	3.8	4.2	4.3	4.4	4.3	3.8	3.8	3.9	4.2	4.5	4.7	4.9	5.0	5.2	5.4	5.6	5.5	5.1	4.5	4.0	3.6	3.3	3.3	3.5	4.5	4.4

ATOVS : MEAN O−B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)
NOVEMBER 2000 : HIRS4 channel (400 hPa)
NOAA−15, USING ALL OBSERVATIONS

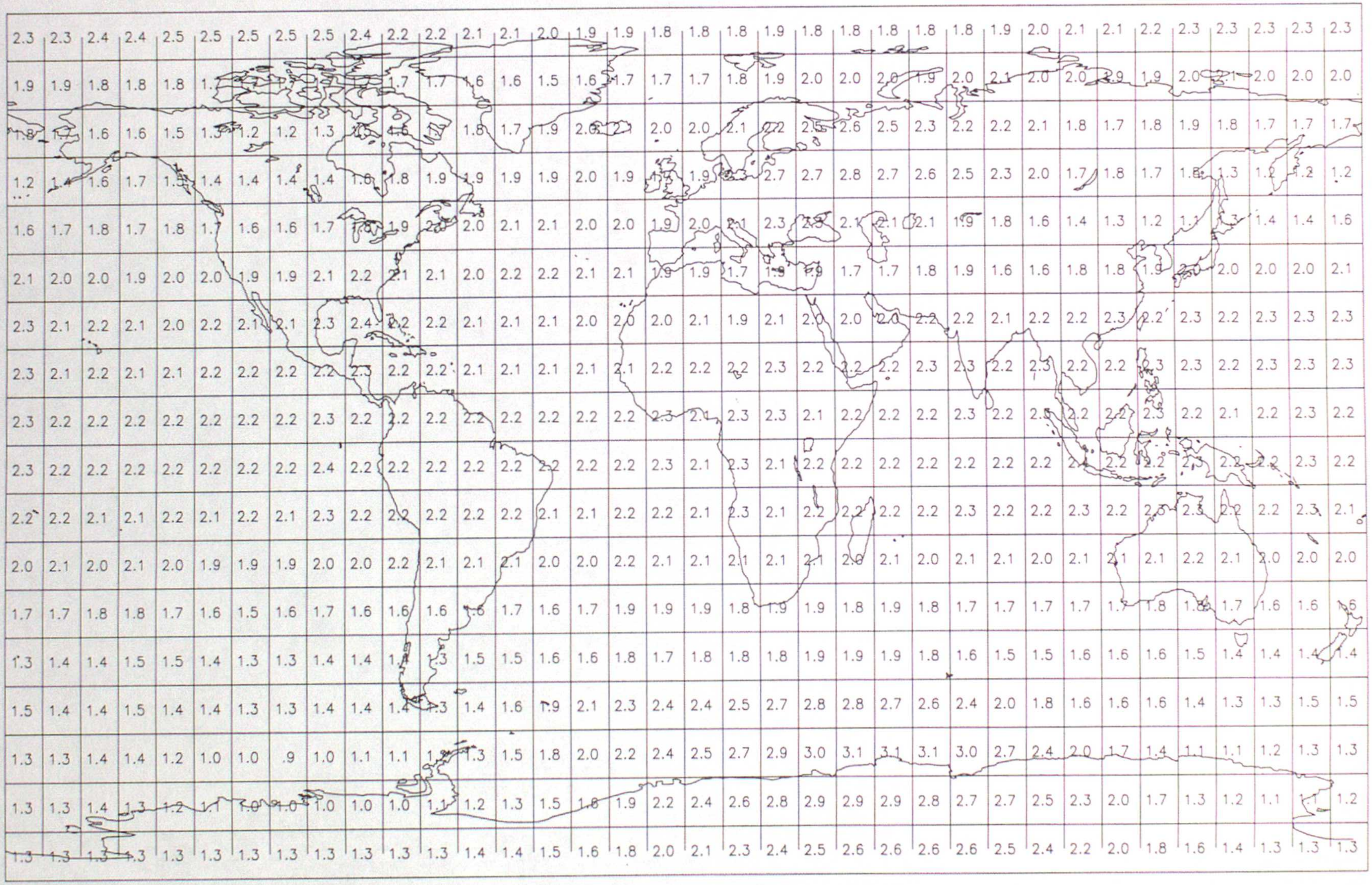
FIGURE 32



3.0	2.5	2.2	2.0	1.9	1.8	1.9	2.2	2.5	2.9	3.4	3.7	4.1	4.6	4.9	5.1	5.4	5.6	5.9	6.0	6.2	6.4	6.5	6.6	6.8	6.8	6.9	6.8	6.7	6.4	6.0	5.6	5.1	4.6	4.0	3.5
.8	.2	−.2	−.5	−.6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.5	2.3	3.1	4.3	4.9	4.9	5.3	5.6	5.9	6.3	6.7	7.2	7.5	7.7	7.8	7.9	7.9	7.8	7.5	7.0	6.3	5.4	4.5	3.5	2.5	1.5
−1.4	[illegible]	−1.9	−1.7	−1.5	−1.2	−1.1	−.9	−.4	[illegible]	[illegible]	[illegible]	2.4	3.3	3.7	4.1	4.5	4.8	5.3	5.9	6.1	6.4	6.7	7.0	7.3	7.6	7.8	7.7	7.3	6.4	5.3	4.2	2.8	1.5	.5	−.5
−2.7	−2.6	−2.3	−1.8	−1.3	−.6	−.4	−.2	.2	.5	1.2	1.7	2.1	2.4	2.6	2.9	2.7	[illegible]	3.2	[illegible]	3.8	4.3	4.2	4.8	5.1	5.2	5.3	5.2	4.8	3.9	2.8	1.7	.6	−.4	−1.1	−1.9
−1.5	−1.3	−1.0	−.8	−.4	−.1	.2	.4	.5	[illegible]	.9	[illegible]	1.1	1.3	1.4	1.5	1.4	1.3	1.5	1.3	1.4	1.8	1.5	1.7	2.0	2.1	2.2	2.2	1.8	1.3	.6	.1	−.2	−.5	−1.0	−1.1
−1.1	−.9	−.4	−.4	−.2	−.3	−.3	−.2	−.3	−.1	.5	−.4	−.4	−.3	−.3	−.3	−.4	−.6	−.2	−.6	−.4	−.7	−.4	−.5	−.2	.0	.3	.3	−.5	−.6	−.9	−1.2	−1.3	−1.1	−1.4	−1.0
−2.0	−2.0	−1.4	−1.5	−1.3	−1.6	−1.9	−1.9	−2.5	−2.2	−2.5	−2.2	−2.0	−2.0	−1.8	−1.7	−1.6	−1.8	−1.7	−2.0	−1.9	−2.4	−2.0	−2.3	−2.2	−2.6	−2.9	−2.9	−3.1	−2.9	−2.8	−2.9	−3.1	−2.7	−2.8	−2.5
−2.9	−3.2	−2.7	−2.6	−2.6	−2.9	−3.1	−3.1	−3.6	−3.3	−3.6	−3.1	−3.0	−3.0	−2.7	−2.7	−2.6	−2.6	−3.1	−3.3	−3.2	−3.4	−3.2	−3.4	−3.3	−3.4	−3.9	−3.7	−3.9	−3.9	−3.6	−3.7	−3.7	−3.5	−3.4	−3.4
−3.5	−3.9	−3.6	−3.5	−3.5	−3.4	−3.5	−3.6	−3.5	−3.8	−3.6	−3.4	−3.4	−3.3	−3.1	−3.1	−3.3	−3.0	−3.5	−3.5	−3.2	−3.3	−3.3	−3.4	−3.3	−3.2	−3.7	−3.5	−3.6	−3.9	−3.8	−4.0	−3.8	−3.8	−3.6	−3.7
−3.7	−4.0	−3.7	−3.6	−3.6	−3.5	−3.6	−3.8	−3.5	−3.7	−3.6	−3.3	−3.4	−3.3	−3.4	−3.3	−3.5	−3.1	−3.5	−3.3	−3.3	−3.3	−3.4	−3.3	−3.3	−3.3	−3.5	−3.6	−3.5	−4.1	−4.0	−3.9	−3.9	−3.8	−3.6	−3.9
−3.4	−3.2	−3.1	−2.9	−3.0	−2.9	−2.7	−3.0	−3.0	−3.6	−3.6	−3.5	−3.4	−3.0	−3.2	−3.0	−3.1	−2.9	−3.4	−3.2	−3.5	−3.2	−3.1	−3.2	−3.5	−3.4	−3.7	−3.9	−4.0	−4.0	−3.9	−3.8	−3.7	−3.6	−3.2	−3.5
−2.6	−2.3	−2.5	−2.4	−2.2	−2.1	−1.9	−1.9	−1.8	−2.5	−2.6	−2.8	−2.7	−2.7	−2.8	−2.5	−2.4	−2.5	−2.8	−2.7	−3.1	−2.9	−2.7	−2.5	−2.7	−2.7	−2.9	−3.4	−3.3	−3.4	−3.0	−3.0	−2.9	−2.8	−2.4	−2.6
−2.7	−2.4	−2.6	−2.4	−2.3	−2.2	−2.1	−1.9	−1.7	−1.8	−1.7	−1.9	−1.9	−2.0	−2.1	−2.1	−1.8	−2.1	−2.0	−2.2	−2.5	−2.4	−2.2	−2.0	−2.2	−2.1	−2.2	−2.6	−2.6	−2.7	−2.6	−2.8	−2.6	−2.4	−2.3	−2.4
−3.9	−3.6	−3.8	−3.8	−3.6	−3.5	−3.4	−3.2	−3.3	−3.2	−3.0	−3.0	−3.0	−3.1	−3.0	−2.7	−2.3	−2.3	−2.0	−2.2	−2.2	−2.2	−2.2	−2.2	−2.4	−2.8	−3.1	−3.7	−3.9	−3.7	−3.6	−3.4	−3.4	−3.5	−3.7	−3.6
−6.3	−6.3	−6.3	−6.2	−6.0	−5.9	−5.6	−5.6	−5.7	−5.7	−5.5	−5.2	−5.0	−4.8	−4.3	−3.6	−3.0	−2.4	−1.9	−2.0	−2.1	−2.2	−2.3	−2.6	−3.1	−3.5	−4.0	−4.7	−5.4	−5.5	−5.5	−5.5	−5.4	−5.7	−6.1	−6.2
−8.6	−8.8	−8.8	−8.6	−8.5	−8.3	−7.9	−7.7	−7.6	−7.5	−7.1	−6.6	−6.1	−5.5	−4.7	−3.8	−3.0	−2.2	−1.8	−1.7	−1.7	−1.8	−1.9	−2.2	−2.8	−3.3	−3.8	−4.3	−5.0	−5.6	−6.1	−6.5	−7.0	−7.4	−7.9	−8.3
−8.8	−9.1	−9.1	−8.9	−8.7	−8.5	−8.4	−8.2	−7.9	−7.6	−7.2	−6.7	−6.2	−5.6	−4.8	−4.1	−3.3	−2.3	−1.6	−1.1	−.8	−.7	−.7	−1.2	−2.0	−2.2	−2.1	−2.1	−2.8	−3.5	−4.2	−5.1	−6.0	−6.9	−7.7	−8.3
−7.0	−7.2	−7.4	−7.3	−7.3	−7.1	−6.9	−6.6	−6.4	−6.3	−6.2	−6.0	−5.7	−5.3	−4.9	−4.4	−4.0	−3.5	−3.1	−2.8	−2.5	−2.3	−2.0	−1.9	−1.9	−2.0	−2.3	−2.7	−3.2	−3.7	−4.3	−4.9	−5.4	−5.9	−6.4	−6.8

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
NOVEMBER 2000 : HIRS4 channel (400 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 33



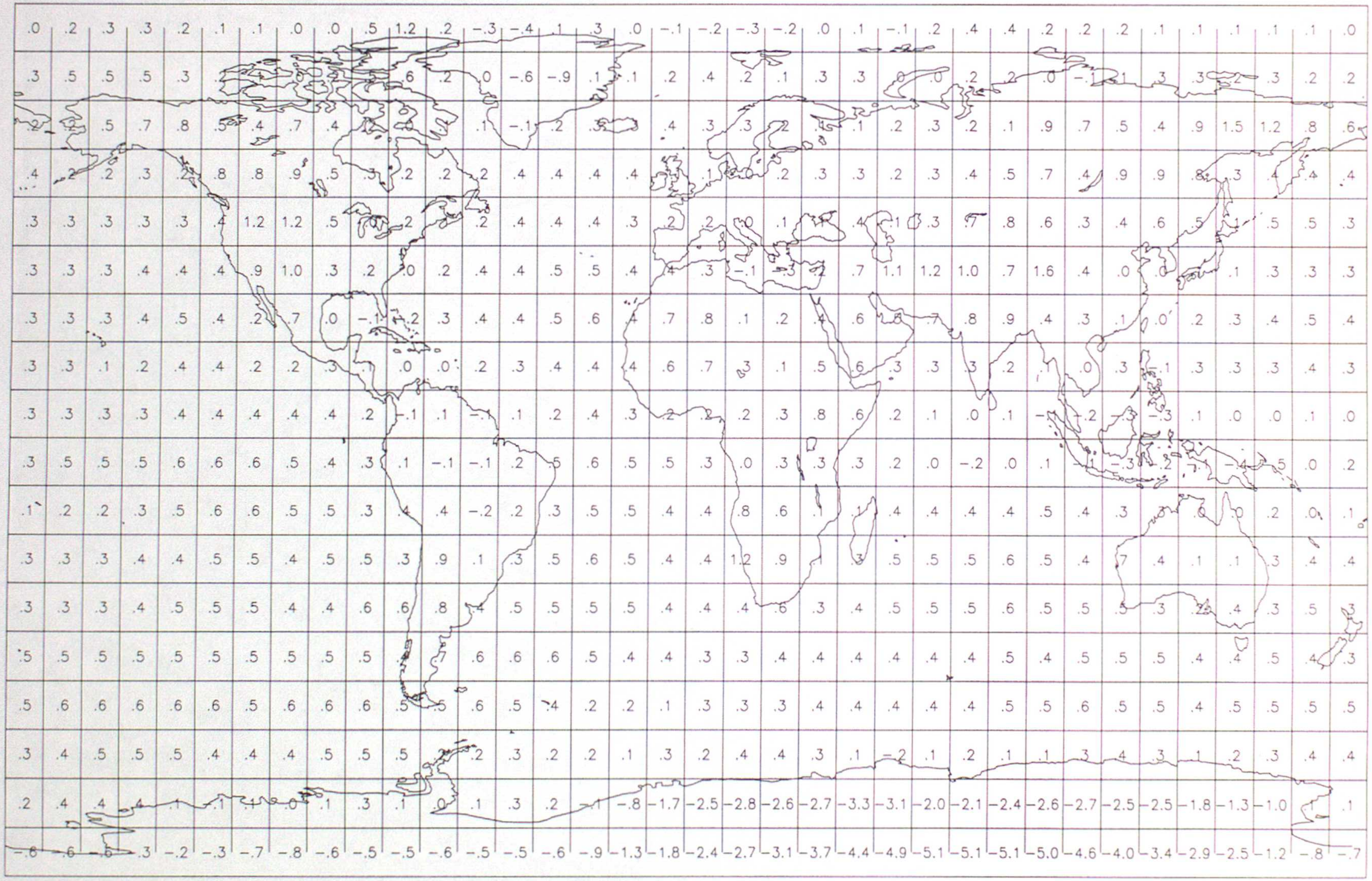
2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3
1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	[illegible]	[illegible]	1.7	1.7	1.6	1.6	1.5	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.0	2.0	1.9	2.0	2.1	2.0	2.0	1.9	1.9	2.0	2.1	2.0	2.0	2.0
1.8	1.7	1.6	1.6	1.5	1.3	1.2	1.2	1.3	1.5	1.6	1.7	1.8	1.7	1.9	2.0	2.1	2.0	2.0	2.1	2.2	2.5	2.6	2.5	2.3	2.2	2.2	2.1	1.8	1.7	1.8	1.9	1.8	1.7	1.7	1.7
1.2	1.4	1.6	1.7	1.5	1.4	1.4	1.4	1.4	1.6	1.8	1.9	1.9	1.9	1.9	2.0	1.9	[illegible]	1.9	[illegible]	2.7	2.7	2.8	2.7	2.6	2.5	2.3	2.0	1.7	1.8	1.7	1.8	1.3	1.2	1.2	1.2
1.6	1.7	1.8	1.7	1.8	1.7	1.6	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.0	2.0	1.9	2.0	2.1	2.3	2.3	2.1	2.1	2.1	1.9	1.8	1.6	1.4	1.3	1.2	1.1	1.3	1.4	1.4	1.6
2.1	2.0	2.0	1.9	2.0	2.0	1.9	1.9	2.1	2.2	2.1	2.1	2.0	2.2	2.2	2.1	2.1	1.9	1.9	1.7	1.9	1.9	1.7	1.7	1.8	1.9	1.6	1.6	1.8	1.8	1.9	[illegible]	2.0	2.0	2.0	2.1
2.3	2.1	2.2	2.1	2.0	2.2	2.1	2.1	2.3	2.4	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	1.9	2.1	2.0	2.0	2.0	2.2	2.2	2.1	2.2	2.2	2.3	2.2	2.3	2.2	2.3	2.3	2.3
2.3	2.1	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.3	2.3	2.2	2.3	2.2	2.2	2.3	2.3	2.2	2.3	2.3	2.3
2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.1	2.3	2.3	2.1	2.2	2.2	2.2	2.3	2.2	2.3	2.2	2.2	2.3	2.2	2.1	2.2	2.3	2.2
2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.4	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.1	2.3	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	[illegible]	2.2	2.2	2.3	2.2	2.2	2.3	2.2
2.2	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.2	2.2	2.1	2.3	2.1	2.2	2.2	2.2	2.2	2.3	2.2	2.2	2.3	2.2	2.3	2.3	2.2	2.2	2.3	2.1
2.0	2.1	2.0	2.1	2.0	1.9	1.9	1.9	2.0	2.0	2.2	2.1	2.1	2.1	2.0	2.0	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.1	2.1	2.2	2.1	2.0	2.0	2.0
1.7	1.7	1.8	1.8	1.7	1.6	1.5	1.6	1.7	1.6	1.6	1.6	1.6	1.7	1.6	1.7	1.9	1.9	1.9	1.8	1.9	1.9	1.8	1.9	1.8	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.6	1.6	1.6
1.3	1.4	1.4	1.5	1.5	1.4	1.3	1.3	1.4	1.4	1.4	1.3	1.5	1.5	1.6	1.6	1.8	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.6	1.5	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.4	1.4
1.5	1.4	1.4	1.5	1.4	1.4	1.3	1.3	1.4	1.4	1.4	1.3	1.4	1.6	1.9	2.1	2.3	2.4	2.4	2.5	2.7	2.8	2.8	2.7	2.6	2.4	2.0	1.8	1.6	1.6	1.6	1.4	1.3	1.3	1.5	1.5
1.3	1.3	1.4	1.4	1.2	1.0	1.0	.9	1.0	1.1	1.1	[illegible]	1.3	1.5	1.8	2.0	2.2	2.4	2.5	2.7	2.9	3.0	3.1	3.1	3.1	3.0	2.7	2.4	2.0	1.7	1.4	1.1	1.1	1.2	1.3	1.3
1.3	1.3	1.4	1.3	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.3	1.5	1.6	1.9	2.2	2.4	2.6	2.8	2.9	2.9	2.9	2.8	2.7	2.7	2.5	2.3	2.0	1.7	1.3	1.2	1.1	1.1	1.2
1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.8	2.0	2.1	2.3	2.4	2.5	2.6	2.6	2.6	2.6	2.5	2.4	2.2	2.0	1.8	1.6	1.4	1.3	1.3	1.3

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : AMSUA-5 Channel (700 hPa)

NOAA-15, USING ALL OBSERVATIONS

FIGURE 34

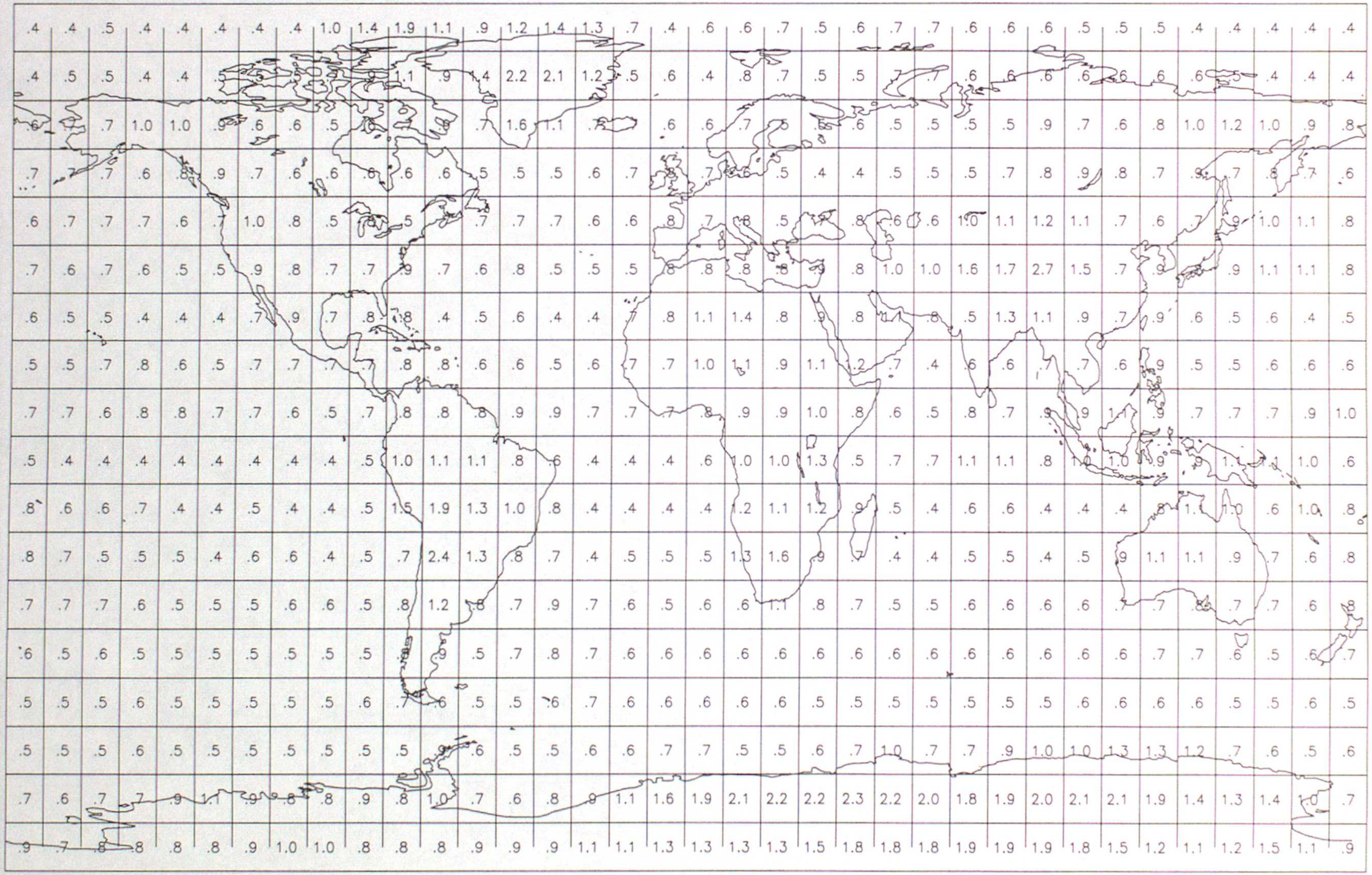


ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

FIGURE 35

NOVEMBER 2000 : AMSUA-5 channel (700 hPa)

NOAA-15, USING ALL OBSERVATIONS



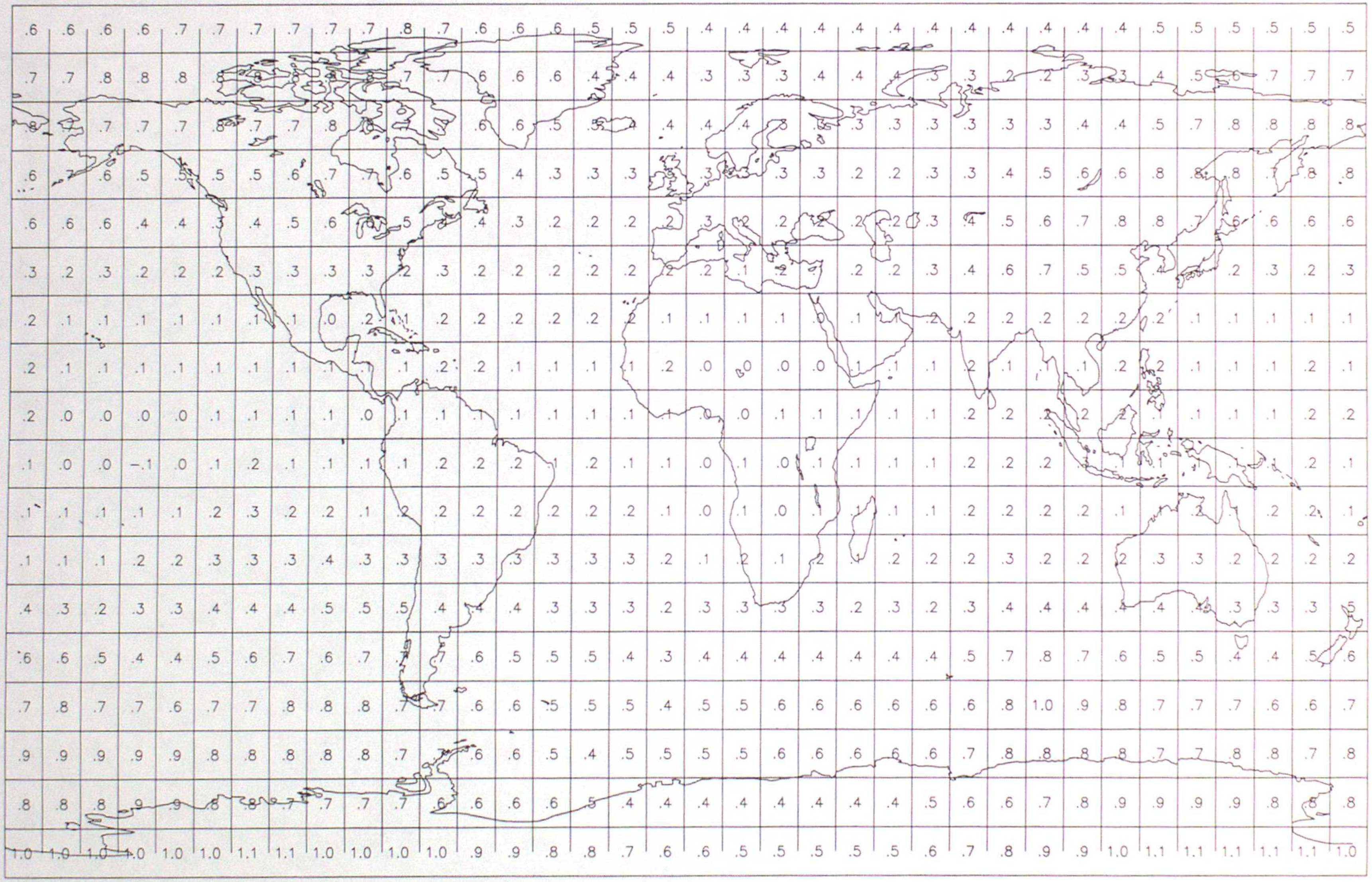
.4	.4	.5	.4	.4	.4	.4	.4	1.0	1.4	1.9	1.1	.9	1.2	1.4	1.3	.7	.4	.6	.6	.7	.5	.6	.7	.7	.6	.6	.6	.5	.5	.5	.4	.4	.4	.4	.4
.4	.5	.5	.4	.4	.5	.5	.5	[illegible]	.9	1.1	.9	1.4	2.2	2.1	1.2	.5	.6	.4	.8	.7	.5	.5	.7	.7	.6	.6	.6	.6	.6	.6	.6	.5	.4	.4	.4
.6	.7	.7	1.0	1.0	.9	.6	.6	.5	.6	.7	.8	.7	1.6	1.1	.7		.6	.6	.7	.5	.5	.6	.5	.5	.5	.5	.9	.7	.6	.8	1.0	1.2	1.0	.9	.8
.7	.7	.7	.6	.8	.9	.7	.6	.6	.6	.6	.6	.5	.5	.5	.6	.7	.8	.7	.6	.5	.4	.4	.5	.5	.5	.7	.8	.9	.8	.7	.9	.7	.8	.7	.6
.6	.7	.7	.7	.6	.7	1.0	.8	.5	.8	.5		.7	.7	.7	.6	.6	.8	.7	.8	.5	.7	.8	.6	.6	1.0	1.1	1.2	1.1	.7	.6	.7	.9	1.0	1.1	.8
.7	.6	.7	.6	.5	.5	.9	.8	.7	.7	.9	.7	.6	.8	.5	.5	.5	.8	.8	.8	.8	.9	.8	1.0	1.0	1.6	1.7	2.7	1.5	.7	.9		.9	1.1	1.1	.8
.6	.5	.5	.4	.4	.4	.7	.9	.7	.8	.8	.4	.5	.6	.4	.4	.7	.8	1.1	1.4	.8	.9	.8	1.1	.8	.5	1.3	1.1	.9	.7	.9	.6	.5	.6	.4	.5
.5	.5	.7	.8	.6	.5	.7	.7	.7	.7	.8	.8	.6	.6	.5	.6	.7	.7	1.0	1.1	.9	1.1	1.2	.7	.4	.6	.6	.7	.7	.6	.9	.5	.5	.6	.6	.6
.7	.7	.6	.8	.8	.7	.7	.6	.5	.7	.8	.8	.8	.9	.9	.7	.7	.7	.8	.9	.9	1.0	.8	.6	.5	.8	.7	.9	.9	1.1	.9	.7	.7	.7	.9	1.0
.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	1.0	1.1	1.1	.8	.6	.4	.4	.4	.6	1.0	1.0	1.3	.5	.7	.7	1.1	1.1	.8	1.0	1.0	.9	.9	1.1	1.1	1.0	.6
.8	.6	.6	.7	.4	.4	.5	.4	.4	.5	1.5	1.9	1.3	1.0	.8	.4	.4	.4	.4	1.2	1.1	1.2	.9	.5	.4	.6	.6	.4	.4	.4	.8	1.1	1.0	.6	1.0	.8
.8	.7	.5	.5	.5	.4	.6	.6	.4	.5	.7	2.4	1.3	.8	.7	.4	.5	.5	.5	1.3	1.6	.9	.7	.4	.4	.5	.5	.4	.5	.9	1.1	1.1	.9	.7	.6	.8
.7	.7	.7	.6	.5	.5	.5	.6	.6	.5	.8	1.2	.8	.7	.9	.7	.6	.5	.6	.6	1.1	.8	.7	.5	.5	.6	.6	.6	.6	.7	.7	.8	.7	.7	.6	.8
.6	.5	.6	.5	.5	.5	.5	.5	.5	.5	.8	.9	.5	.7	.8	.7	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.7	.6	.5	.6	.7
.5	.5	.5	.6	.5	.5	.5	.5	.5	.6	.7	.6	.5	.5	.6	.7	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.5	.5	.6	.5
.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.9	.6	.5	.5	.6	.6	.7	.7	.5	.5	.6	.7	1.0	.7	.7	.9	1.0	1.0	1.3	1.3	1.2	.7	.6	.5	.6
.7	.6	.7	.7	.9	1.1	.9	.8	.8	.9	.8	1.0	.7	.6	.8	.9	1.1	1.6	1.9	2.1	2.2	2.2	2.3	2.2	2.0	1.8	1.9	2.0	2.1	2.1	1.9	1.4	1.3	1.4	1.0	.7
.9	.7	.8	.8	.8	.8	.9	1.0	1.0	.8	.8	.8	.9	.9	.9	1.1	1.1	1.3	1.3	1.3	1.3	1.5	1.8	1.8	1.8	1.9	1.9	1.9	1.8	1.5	1.2	1.1	1.2	1.5	1.1	.9

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : AMSUA-7 Channel (300 hPa)

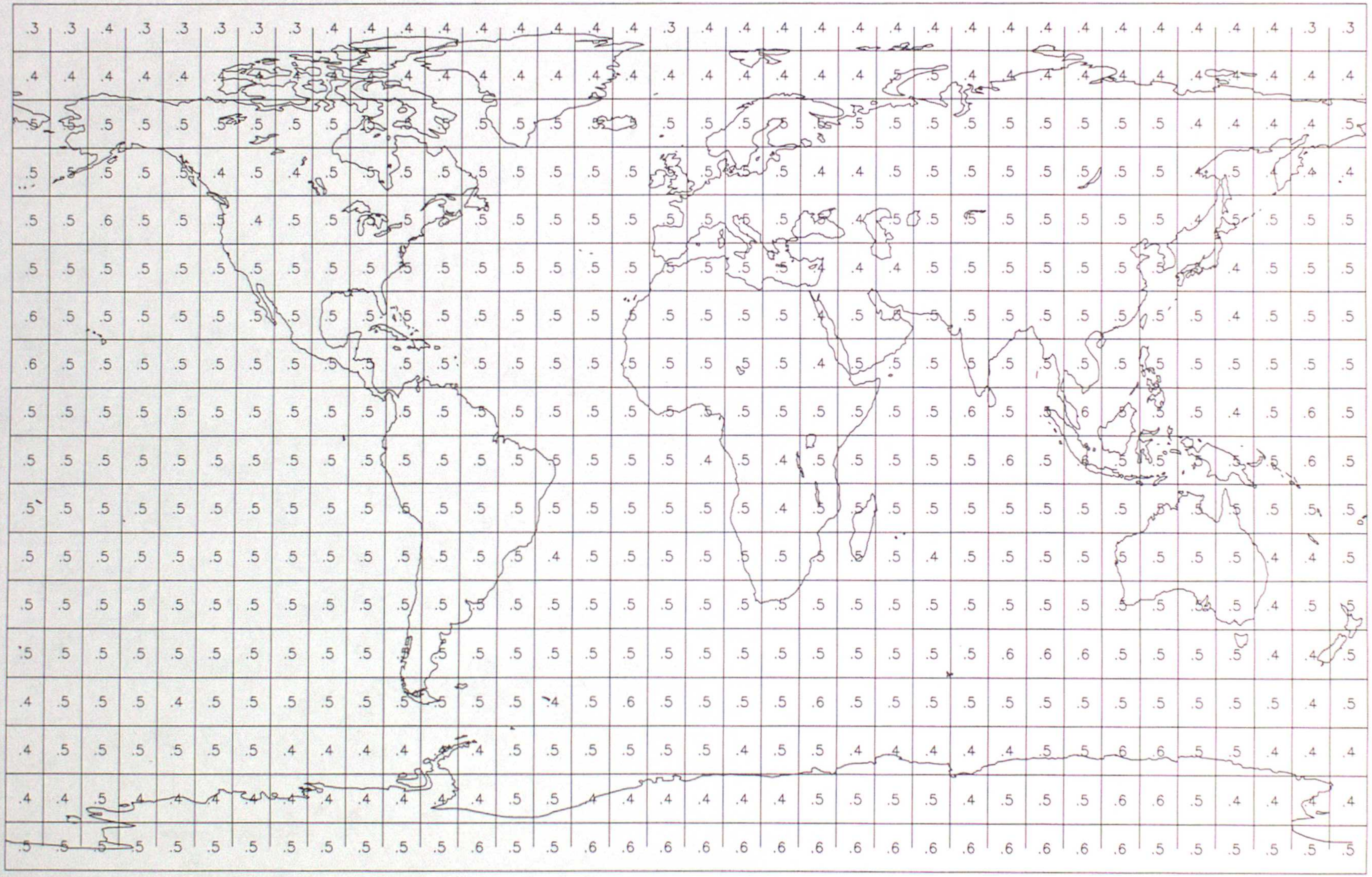
NOAA-15, USING ALL OBSERVATIONS

FIGURE 36


.6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .8 .7 .6 .6 .6 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5
.7 .7 .8 .8 .8 .8 .8 .8 .8 .8 .7 .7 .6 .6 .6 .4 .4 .4 .3 .3 .3 .4 .4 .4 .3 .3 .2 .2 .3 .3 .4 .5 .6 .7 .7 .7
.8 .7 .7 .7 .7 .8 .7 .7 .8 .8 .7 .7 .6 .6 .5 .5 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .5 .7 .8 .8 .8 .8
.6 .7 .6 .5 .5 .5 .5 .6 .7 .7 .6 .5 .5 .4 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .4 .5 .6 .6 .8 .8 .8 .7 .8 .8
.6 .6 .6 .4 .4 .3 .4 .5 .6 .6 .5 [illegible] .4 .3 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .3 .4 .5 .6 .7 .8 .8 .7 .6 .6 .6 .6
.3 .2 .3 .2 .2 .2 .3 .3 .3 .3 .2 .3 .2 .2 .2 .2 .2 .2 .2 .1 .2 [illegible] .2 .2 .3 .4 .6 .7 .5 .5 .4 [illegible] .2 .3 .2 .3
.2 .1 .1 .1 .1 .1 .1 .1 .0 .2 .1 .2 .2 .2 .2 .2 .2 .1 .1 .1 .1 .0 .1 .1 .2 .2 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1
.2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .1 .1 .1 .1 .2 .0 .0 .0 .0 .1 .1 .1 .2 .1 .1 .1 .2 .2 .1 .1 .1 .2 .1
.2 .0 .0 .0 .0 .1 .1 .1 .1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .1 .1 .1 .1 .2 .2 .2 .2 .2 .1 .1 .1 .1 .2 .2
.1 .0 .0 −.1 .0 .1 .2 .1 .1 .1 .1 .2 .2 .2 .1 .2 .1 .1 .0 .1 .0 .1 .1 .1 .1 .2 .2 .2 .3 .1 .1 .1 .1 .1 .2 .1
.1 .1 .1 .1 .1 .2 .3 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .1 .0 .1 .0 .1 .1 .1 .1 .2 .2 .2 .2 .1 .1 .2 .1 .2 .2 .1
.1 .1 .1 .2 .2 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .2 .1 .2 .1 .2 .1 .2 .2 .2 .3 .2 .2 .2 .3 .3 .2 .2 .2 .2
.4 .3 .2 .3 .3 .4 .4 .4 .5 .5 .5 .4 .4 .4 .3 .3 .3 .2 .3 .3 .3 .3 .2 .3 .2 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .5
.6 .6 .5 .4 .4 .5 .6 .7 .6 .7 .7 .7 .6 .5 .5 .5 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .7 .8 .7 .6 .5 .5 .4 .4 .5 .6
.7 .8 .7 .7 .6 .7 .7 .8 .8 .8 .7 .7 .6 .6 .5 .5 .5 .4 .5 .5 .5 .6 .6 .6 .6 .6 .6 .8 1.0 .9 .8 .7 .7 .7 .6 .6 .7
.9 .9 .9 .9 .9 .8 .8 .8 .8 .8 .7 .7 .6 .6 .5 .4 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .7 .8 .8 .8 .8 .7 .7 .8 .8 .7 .8
.8 .8 .8 .9 .9 .8 .8 .7 .7 .7 .7 .6 .6 .6 .6 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .6 .6 .7 .8 .9 .9 .9 .9 .8 .8 .8
1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.0 1.0 1.0 1.0 .9 .9 .8 .8 .7 .6 .6 .6 .5 .5 .5 .5 .5 .6 .7 .8 .9 .9 1.0 1.1 1.1 1.1 1.1 1.1 1.0

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)
NOVEMBER 2000 : AMSUA-7 channel (300 hPa)
NOAA-15, USING ALL OBSERVATIONS

FIGURE 37

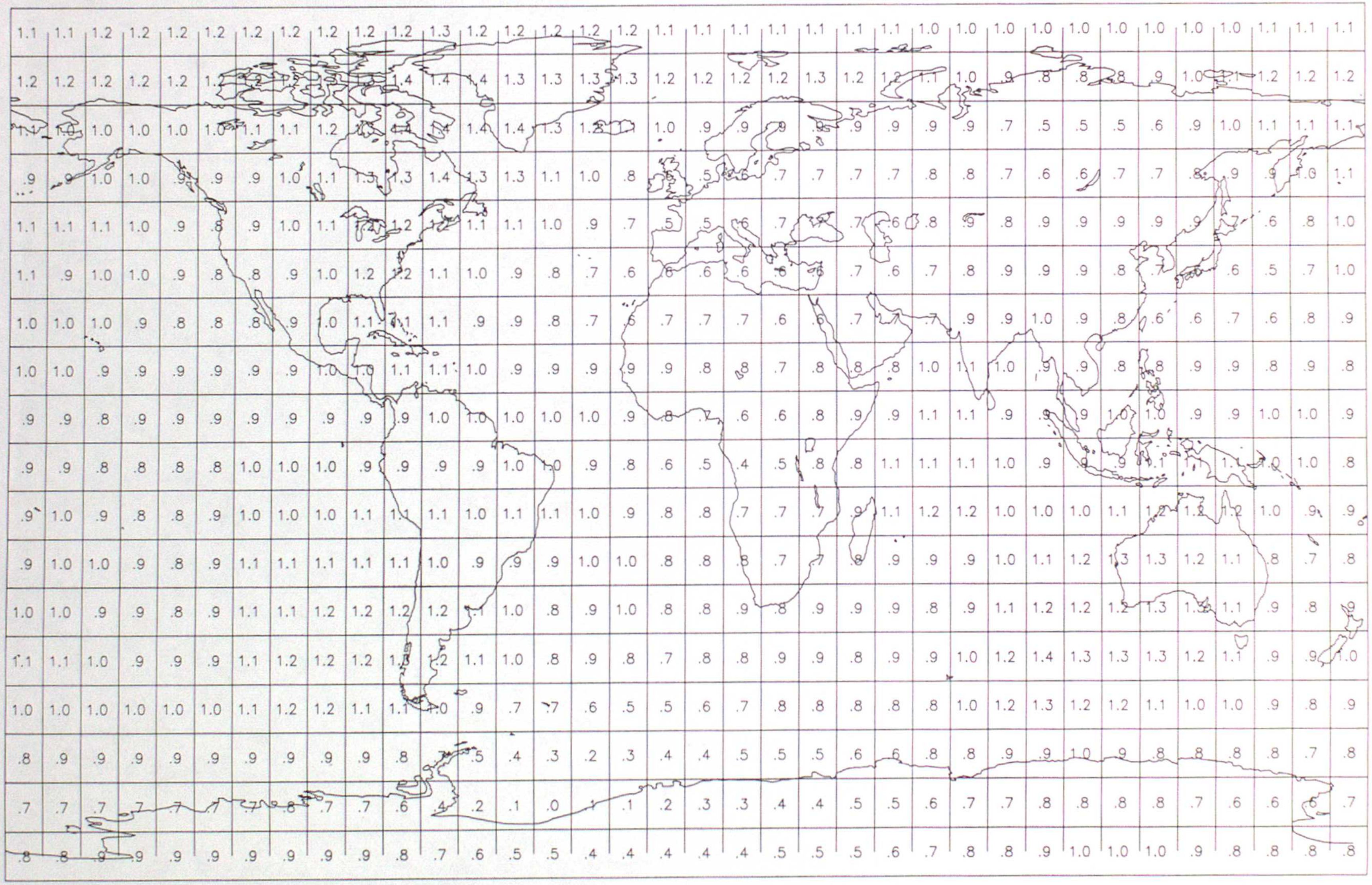

.3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .5
.5 .5 .5 .5 .5 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .4
.5 .5 .6 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5
.6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5
.6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .6 .5 .5 .5 .4 .5 .6 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .5 .5 .5 .5 .5 .6 .5 .6 .5 .5 .5 .5 .5 .6 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .5 .5 .5 .5 .4 .4 .5
.4 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .6 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5
.4 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4 .4 .4 .4 .4 .5 .5 .6 .6 .5 .5 .4 .4 .4
.4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .5 .5 .5 .6 .6 .5 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5

ATOVS : MEAN O-B BRIGHTNESS TEMPERATURE DIFFERENCES (DEG C)

NOVEMBER 2000 : AMSUA-9 Channel (100 hPa)

NOAA-15, USING ALL OBSERVATIONS

FIGURE 38



1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1
1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	[illegible]	[illegible]	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.1	1.0	.9	.8	.8	.8	.9	1.0	1.1	1.2	1.2	1.2
1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	[illegible]	[illegible]	1.4	1.4	1.4	1.3	1.2	1.1	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.7	.5	.5	.5	.6	.9	1.0	1.1	1.1	1.1
.9	.9	1.0	1.0	.9	.9	.9	1.0	1.1	1.3	1.3	1.4	1.3	1.3	1.1	1.0	.8	.6	.5	.6	.7	.7	.7	.7	.8	.8	.7	.6	.6	.7	.7	.8	.9	.9	1.0	1.1
1.1	1.1	1.1	1.0	.9	.8	.9	1.0	1.1	1.2	1.2	1.2	1.1	1.1	1.0	.9	.7	.5	.5	.6	.7	.7	.7	.6	.8	.9	.8	.9	.9	.9	.9	.9	.7	.6	.8	1.0
1.1	.9	1.0	1.0	.9	.8	.8	.9	1.0	1.2	1.2	1.1	1.0	.9	.8	.7	.6	.6	.6	.6	.6	.6	.7	.6	.7	.8	.9	.9	.9	.8	.7	[illegible]	.6	.5	.7	1.0
1.0	1.0	1.0	.9	.8	.8	.8	.9	1.0	1.1	1.1	1.1	.9	.9	.8	.7	.6	.7	.7	.7	.6	.6	.7	.7	.7	.9	.9	1.0	.9	.8	.6	.6	.7	.6	.8	.9
1.0	1.0	.9	.9	.9	.9	.9	.9	1.0	1.0	1.1	1.1	1.0	.9	.9	.9	.9	.9	.8	.8	.7	.8	.8	.8	1.0	1.1	1.0	.9	.9	.8	.8	.9	.9	.8	.9	.8
.9	.9	.8	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	1.0	1.0	.9	.8	.7	.6	.6	.8	.9	.9	1.1	1.1	.9	.9	.9	1.0	1.0	.9	.9	1.0	1.0	.9
.9	.9	.8	.8	.8	.8	1.0	1.0	1.0	.9	.9	.9	.9	1.0	1.0	.9	.8	.6	.5	.4	.5	.8	.8	1.1	1.1	1.1	1.0	.9	.9	.9	1.1	1.1	1.1	1.0	1.0	.8
.9	1.0	.9	.8	.8	.9	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.1	1.1	1.0	.9	.8	.8	.7	.7	.7	.9	1.1	1.2	1.2	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.0	.9	.9
.9	1.0	1.0	.9	.8	.9	1.1	1.1	1.1	1.1	1.1	1.0	.9	.9	.9	1.0	1.0	.8	.8	.8	.7	.7	.8	.9	.9	.9	1.0	1.1	1.2	1.3	1.3	1.2	1.1	.8	.7	.8
1.0	1.0	.9	.9	.8	.9	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.0	.8	.9	1.0	.8	.8	.9	.8	.9	.9	.9	.8	.9	1.1	1.2	1.2	1.2	1.3	1.3	1.1	.9	.8	.9
1.1	1.1	1.0	.9	.9	.9	1.1	1.2	1.2	1.2	1.3	1.2	1.1	1.0	.8	.9	.8	.7	.8	.8	.9	.9	.8	.9	.9	1.0	1.2	1.4	1.3	1.3	1.3	1.2	1.1	.9	.9	1.0
1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.1	1.1	1.0	.9	.7	.7	.6	.5	.5	.6	.7	.8	.8	.8	.8	.8	1.0	1.2	1.3	1.2	1.2	1.1	1.0	1.0	.9	.8	.9
.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	.8	.7	.5	.4	.3	.2	.3	.4	.4	.5	.5	.5	.6	.6	.8	.8	.9	.9	1.0	.9	.8	.8	.8	.8	.7	.8
.7	.7	.7	.7	.7	.7	.7	.8	.7	.7	.6	.4	.2	.1	.0	.1	.1	.2	.3	.3	.4	.4	.5	.5	.6	.7	.7	.8	.8	.8	.8	.7	.6	.6	.6	.7
.8	.8	.9	.9	.9	.9	.9	.9	.9	.9	.8	.7	.6	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.6	.7	.8	.8	.9	1.0	1.0	1.0	.9	.8	.8	.8	.8

ATOVS : SD O-B BRIGHTNESS TEMPERATURE DIFFERENCES(DEG C)

NOVEMBER 2000 : AMSUA-9 channel (100 hPa)

NOAA-15, USING ALL OBSERVATIONS

FIGURE 39

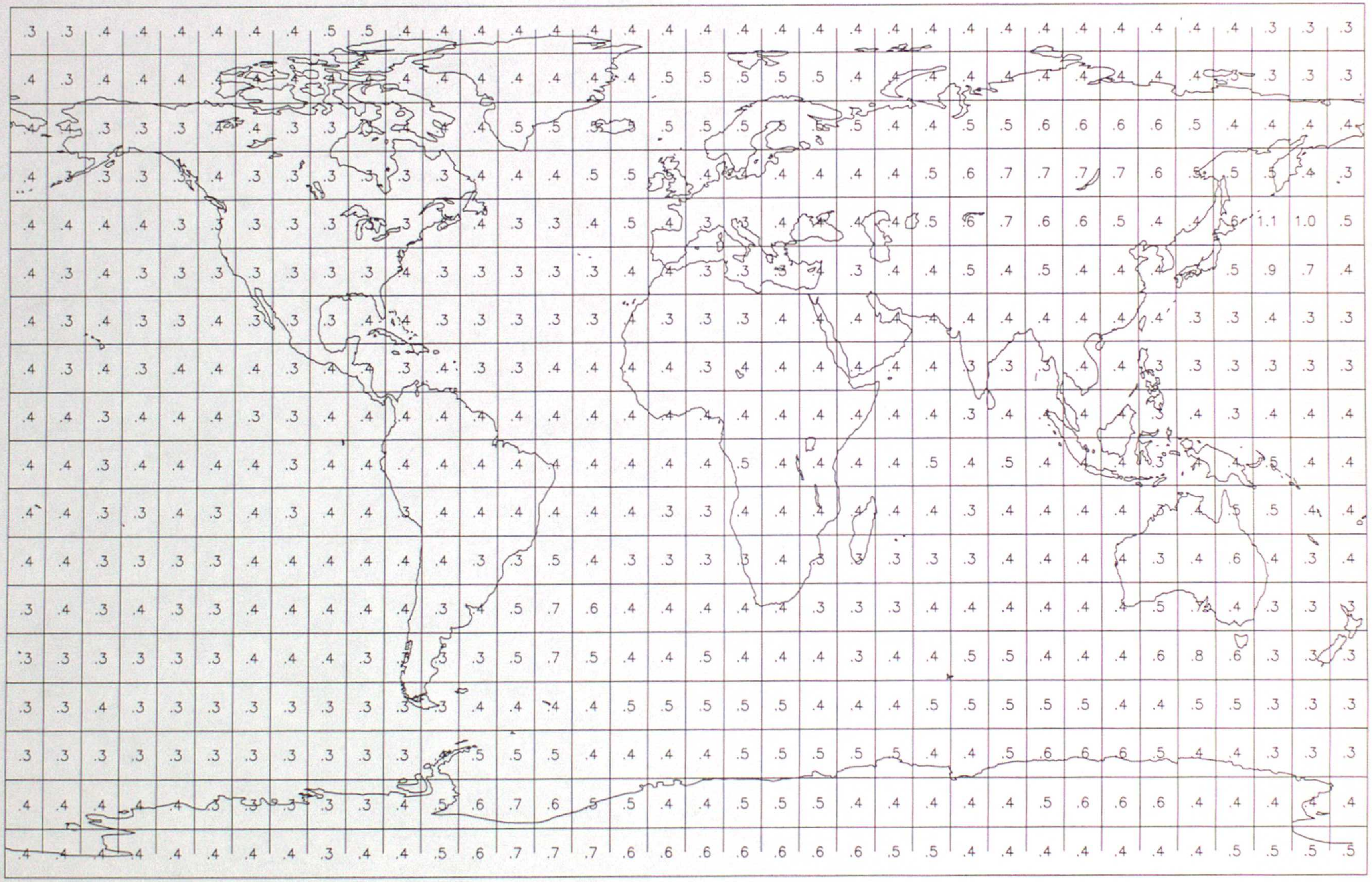

.3 .3 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3
.4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3
.4 .4 .3 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .6 .6 .6 .6 .5 .4 .4 .4 .4
.4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .5 .6 .7 .7 .7 .7 .6 .5 .5 .5 .4 .3
.4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 [illegible] .4 .3 .3 .4 .5 .4 .3 .3 .4 .4 .4 .4 .5 .6 .7 .6 .6 .5 .4 .4 .6 1.1 1.0 .5
.4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .5 .4 .3 .4 .4 .5 .4 .5 .4 .4 .4 [illegible] .5 .9 .7 .4
.4 .3 .4 .3 .3 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .3 .3
.4 .3 .4 .3 .4 .4 .4 .3 .4 .4 .3 .4 .3 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3
.4 .4 .3 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .3 .4 .4 .4
.4 .4 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .5 .4 .5 .4 .4 .4 .3 .4 .4 .5 .4 .4
.4 .4 .3 .3 .4 .3 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .5 .5 .4 .4
.4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .5 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .4 .6 .4 .3 .4
.3 .4 .3 .4 .3 .3 .4 .4 .4 .4 .4 .3 .4 .5 .7 .6 .4 .4 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .5 .7 .4 .3 .3 .3
.3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .5 .7 .5 .4 .4 .5 .4 .4 .4 .3 .4 .4 .5 .5 .4 .4 .4 .6 .8 .6 .3 .3 .3
.3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .5 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .5 .5 .5 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .5 .6 .6 .6 .5 .4 .4 .3 .3 .3
.4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .5 .6 .7 .6 .5 .5 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .5 .6 .6 .6 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .5 .6 .7 .7 .7 .6 .6 .6 .6 .6 .6 .6 .5 .5 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoy.

Area monitored :10°N - 80°N, 85°W - 0°W

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :All hours combined.

Elements monitored :Mean sea-level pressure (hPa)
:Wind speed (m s^{-1})
:Wind direction (degrees)

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:NGE :Number of observations with gross errors.

:PGE :Percentage of observations with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. A positive bias indicates the observation is veered to the background

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 m s^{-1} (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
03645	21.7	-27.1	ALL	P	SUR	2	0	0	0.4	4.9	4.9
41501	26.4	-75.6	ALL	P	SUR	370	0	0	0.5	0.1	0.5
41502	24.6	-77.7	ALL	P	SUR	166	0	0	1.4	0.7	1.5
41503	27.4	-77.5	ALL	P	SUR	183	0	0	0.8	0.2	0.8
41504	21.9	-66.6	ALL	P	SUR	174	0	0	0.8	-0.2	0.8
41505	26.3	-66.3	ALL	P	SUR	207	0	0	0.8	-1.0	1.3
41506	20.4	-69.9	ALL	P	SUR	162	0	0	0.8	-0.1	0.8
41521	30.8	-68.0	ALL	P	SUR	283	0	0	0.6	0.0	0.6
41523	27.9	-62.5	ALL	P	SUR	371	0	0	0.6	-0.3	0.7
41524	18.2	-72.1	ALL	P	SUR	20	0	0	1.3	-0.9	1.6
41529	43.6	-18.1	ALL	P	SUR	21	21	100			
41571	30.7	-57.0	ALL	P	SUR	344	0	0	0.7	0.0	0.7
41572	21.3	-48.7	ALL	P	SUR	508	0	0	0.6	-0.3	0.6
41590	18.9	-57.0	ALL	P	SUR	505	0	0	0.5	0.4	0.7
41594	17.6	-73.8	ALL	P	SUR	514	0	0	0.6	0.6	0.8
41595	15.2	-70.5	ALL	P	SUR	517	0	0	0.5	0.5	0.7
41611	13.5	-57.2	ALL	P	SUR	524	0	0	0.5	0.6	0.8
41613	15.4	-38.9	ALL	P	SUR	460	0	0	0.6	0.4	0.7
41615	16.4	-52.4	ALL	P	SUR	467	0	0	0.6	0.0	0.6
41616	21.8	-52.3	ALL	P	SUR	530	0	0	0.6	0.1	0.6
41639	18.3	-59.6	ALL	P	SUR	226	0	0	0.6	0.9	1.1
41642	18.5	-64.1	ALL	P	SUR	245	0	0	0.5	-0.1	0.5
41644	30.7	-49.2	ALL	P	SUR	344	0	0	0.8	-0.2	0.8
44513	37.0	-21.8	ALL	P	SUR	246	3	1	2.0	1.7	2.6
44608	25.9	-28.1	ALL	P	SUR	1600	0	0	0.6	0.2	0.6
44610	50.3	-26.9	ALL	P	SUR	1420	0	0	1.8	-0.5	1.8
44611	43.1	-13.8	ALL	P	SUR	607	0	0	0.9	0.7	1.1
44612	37.9	-45.5	ALL	P	SUR	650	0	0	0.9	0.1	0.9
44613	32.0	-54.0	ALL	P	SUR	658	0	0	0.7	-0.3	0.8
44617	46.0	-6.2	ALL	P	SUR	868	0	0	0.8	0.4	0.9
44620	32.2	-43.0	ALL	P	SUR	649	1	0	1.0	0.2	1.0
44622	53.2	-18.8	ALL	P	SUR	634	0	0	1.1	0.1	1.1
44623	37.4	-30.0	ALL	P	SUR	633	0	0	0.9	0.3	1.0
44626	38.3	-11.4	ALL	P	SUR	1091	9	1	0.7	0.3	0.8
44627	37.7	-25.7	ALL	P	SUR	15	0	0	0.5	0.1	0.5
44628	36.5	-30.7	ALL	P	SUR	995	7	1	1.0	0.2	1.0
44723	45.6	-17.1	ALL	P	SUR	591	0	0	0.9	-0.4	1.0
44724	37.9	-26.0	ALL	P	SUR	617	0	0	0.9	0.1	0.9
44725	47.6	-39.9	ALL	P	SUR	554	0	0	1.0	-0.2	1.0
44726	33.0	-57.6	ALL	P	SUR	875	0	0	0.7	-0.1	0.7
44727	29.6	-38.4	ALL	P	SUR	656	0	0	0.6	-0.7	0.9
44729	46.2	-22.7	ALL	P	SUR	608	0	0	1.3	0.2	1.3
44730	51.7	-13.5	ALL	P	SUR	1115	0	0	1.0	0.3	1.1
44741	62.5	-33.0	ALL	P	SUR	605	0	0	0.8	0.0	0.8
44743	45.0	-11.0	ALL	P	SUR	1185	12	1	1.1	0.4	1.1
44761	50.8	-35.4	ALL	P	SUR	629	0	0	1.4	-0.2	1.4
44762	45.1	-19.4	ALL	P	SUR	496	3	1	0.9	0.0	0.9
44765	35.5	-56.3	ALL	P	SUR	542	4	1	1.3	-0.4	1.4
44767	52.8	-40.8	ALL	P	SUR	185	0	0	0.7	0.3	0.7
44770	50.5	-30.9	ALL	P	SUR	620	0	0	1.4	-0.2	1.4
44771	54.5	-37.1	ALL	P	SUR	532	0	0	1.0	0.0	1.0
44772	45.2	-19.5	ALL	P	SUR	1224	6	0	0.9	-0.4	1.0
44774	50.1	-40.3	ALL	P	SUR	1011	3	0	1.0	-0.8	1.3
44775	40.8	-58.9	ALL	P	SUR	652	0	0	1.1	-0.5	1.2
44776	43.3	-54.2	ALL	P	SUR	649	1	0	1.0	-0.3	1.1
44778	43.7	-53.1	ALL	P	SUR	643	1	0	1.0	-0.3	1.1
44808	40.5	-69.4	ALL	P	SUR	1	0	0	0.0	-0.8	0.8
44810	41.1	-66.6	ALL	P	SUR	1	0	0	0.0	0.0	0.0
44811	41.1	-66.6	ALL	P	SUR	1	0	0	0.0	-4.9	4.9
44813	42.4	-70.7	ALL	P	SUR	1	0	0	0.0	-1.6	1.6

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
44825	40.3	-73.2	ALL	P	SUR	1	0	0	0.0	-1.8	1.8
47555	72.6	-69.7	ALL	P	SUR	301	0	0	1.6	-0.1	1.6
48555	73.9	-72.3	ALL	P	SUR	65	0	0	1.4	-0.2	1.4
48581	79.4	-71.6	ALL	P	SUR	433	0	0	1.3	0.4	1.3
62507	36.1	-23.7	ALL	P	SUR	1031	3	0	0.7	0.0	0.7
62508	35.4	-17.0	ALL	P	SUR	771	0	0	1.4	-0.3	1.4
62509	44.4	-6.3	ALL	P	SUR	1042	2	0	1.4	-0.3	1.4
62512	41.3	-21.9	ALL	P	SUR	321	0	0	1.1	0.2	1.1
62513	47.1	-25.3	ALL	P	SUR	256	0	0	2.2	-0.4	2.2
62514	52.1	-17.8	ALL	P	SUR	586	5	1	1.9	0.4	2.0
62516	44.5	-21.8	ALL	P	SUR	595	0	0	1.2	-0.5	1.3
62517	37.8	-21.0	ALL	P	SUR	616	0	0	0.7	-0.2	0.7
62519	43.3	-17.6	ALL	P	SUR	608	0	0	0.8	-0.8	1.2
62520	33.1	-27.1	ALL	P	SUR	1143	5	0	0.7	-0.2	0.8
62596	60.4	-22.9	ALL	P	SUR	551	0	0	0.7	-0.6	0.9
62705	54.9	-12.6	ALL	P	SUR	1	0	0	0.0	-1.7	1.7
62751	46.4	-4.6	ALL	P	SUR	186	0	0	0.6	-0.3	0.7
62752	45.7	-4.9	ALL	P	SUR	99	0	0	0.6	-0.4	0.7
62753	45.4	-6.9	ALL	P	SUR	10	0	0	0.9	-0.8	1.2
62754	47.2	-7.0	ALL	P	SUR	102	0	0	0.6	-1.1	1.3
62756	45.2	-6.5	ALL	P	SUR	116	0	0	0.6	-0.9	1.1
62757	46.0	-4.1	ALL	P	SUR	101	0	0	0.6	-0.2	0.7
62758	48.0	-7.2	ALL	P	SUR	213	0	0	0.7	-0.5	0.9
62759	46.8	-4.7	ALL	P	SUR	102	0	0	0.6	-0.1	0.6
62829	48.7	-12.4	ALL	P	SUR	1	0	0	0.0	-0.4	0.4
62841	45.8	-8.2	ALL	P	SUR	105	0	0	0.5	-0.4	0.7
62842	47.2	-5.7	ALL	P	SUR	98	0	0	0.7	-0.3	0.8
62881	51.0	-13.3	ALL	P	SUR	1	0	0	0.0	-1.1	1.1
63662	79.7	-5.2	ALL	P	SUR	186	0	0	1.8	0.1	1.8
64517	57.9	-16.7	ALL	P	SUR	1132	0	0	0.9	-0.7	1.2
64521	61.0	-24.5	ALL	P	SUR	293	0	0	0.7	-0.7	1.0
64548	58.2	-18.1	ALL	P	SUR	1315	27	2	1.4	-0.8	1.6
64698	61.4	-27.3	ALL	P	SUR	1049	0	0	0.8	-0.7	1.0
64699	56.9	-52.0	ALL	P	SUR	1061	0	0	0.8	-0.3	0.8
64845	59.1	-11.4	ALL	P	SUR	1	0	0	0.0	0.3	0.3
65593	60.9	-30.3	ALL	P	SUR	1784	48	3	1.8	-0.5	1.9
65599	59.4	-21.1	ALL	P	SUR	1889	20	1	0.7	-0.3	0.8
65600	56.5	-12.5	ALL	P	SUR	1747	10	1	1.2	-0.8	1.5
65601	60.4	-22.6	ALL	P	SUR	1349	12	1	1.4	-0.9	1.6
65602	59.4	-30.7	ALL	P	SUR	1376	14	1	1.2	-0.6	1.3
65662	60.6	-34.9	ALL	P	SUR	180	0	0	0.9	-0.6	1.0
65663	59.5	-40.2	ALL	P	SUR	226	0	0	1.1	-1.0	1.5
WIND SPEED											
03645	21.7	-27.1	ALL	SPEED	SUR	2	0	0	0.0	2.2	2.2
41501	26.4	-75.6	ALL	SPEED	SUR	347	6	2	4.6	3.9	6.0
41502	24.6	-77.7	ALL	SPEED	SUR	86	0	0	2.7	-3.3	4.3
41503	27.4	-77.5	ALL	SPEED	SUR	132	0	0	2.3	1.3	2.7
41504	21.9	-66.6	ALL	SPEED	SUR	105	0	0	2.2	-0.1	2.2
41505	26.3	-66.3	ALL	SPEED	SUR	97	0	0	4.2	-2.8	5.1
41506	20.4	-69.9	ALL	SPEED	SUR	2	0	0	1.3	-4.9	5.0
41521	30.8	-68.0	ALL	SPEED	SUR	6	0	0	1.4	-8.5	8.6
41523	27.9	-62.5	ALL	SPEED	SUR	346	2	1	2.9	1.9	3.5
41590	18.9	-57.0	ALL	SPEED	SUR	501	0	0	2.8	-4.6	5.4
41594	17.6	-73.8	ALL	SPEED	SUR	349	1	0	2.7	1.9	3.3
41611	13.5	-57.2	ALL	SPEED	SUR	519	1	0	2.0	0.5	2.1
41616	21.8	-52.3	ALL	SPEED	SUR	528	0	0	3.4	-3.6	5.0
41630	19.5	-63.6	ALL	SPEED	SUR	376	0	0	2.4	-3.9	4.5
41639	18.3	-59.6	ALL	SPEED	SUR	220	0	0	2.4	0.3	2.4

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND SPEED											
41642	18.5	-64.1	ALL	SPEED	SUR	236	5	2	5.8	4.3	7.3
41644	30.7	-49.2	ALL	SPEED	SUR	2	0	0	3.8	-3.7	5.3
44739	44.3	-57.4	ALL	SPEED	SUR	1	0	0	0.0	3.4	3.4
44743	45.0	-11.0	ALL	SPEED	SUR	1169	5	0	2.1	-1.0	2.3
44762	45.1	-19.4	ALL	SPEED	SUR	3	1	33	1.8	2.2	2.8
44808	40.5	-69.4	ALL	SPEED	SUR	1	0	0	0.0	0.9	0.9
44810	41.1	-66.6	ALL	SPEED	SUR	1	0	0	0.0	-0.5	0.5
44811	41.1	-66.6	ALL	SPEED	SUR	1	0	0	0.0	5.3	5.3
44825	40.3	-73.2	ALL	SPEED	SUR	1	0	0	0.0	0.0	0.0
46743	45.2	-12.0	ALL	SPEED	SUR	1	0	0	0.0	-2.0	2.0
62506	35.7	-33.6	ALL	SPEED	SUR	595	0	0	2.9	-2.3	3.7
62508	35.4	-17.0	ALL	SPEED	SUR	751	0	0	1.4	-0.3	1.4
62705	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-0.1	0.1
62805	54.9	-12.6	ALL	SPEED	SUR	1	0	0	0.0	-2.7	2.7
62829	48.7	-12.4	ALL	SPEED	SUR	1	0	0	0.0	-1.3	1.3
62836	28.5	-84.5	ALL	SPEED	SUR	1	0	0	0.0	-1.6	1.6
62881	51.0	-13.3	ALL	SPEED	SUR	1	0	0	0.0	-0.3	0.3
64845	59.1	-11.4	ALL	SPEED	SUR	1	0	0	0.0	1.9	1.9
705278	25.5	-79.6	ALL	SPEED	SUR	1	0	0	0.0	4.9	4.9
WIND DIRECTION											
03645	21.7	-27.1	ALL	DIRN.	SUR	2	0	0	6.7	1.9	6.9
41501	26.4	-75.6	ALL	DIRN.	SUR	146	6	4	18.7	1.8	18.8
41503	27.4	-77.5	ALL	DIRN.	SUR	77	0	0	24.5	15.3	28.9
41504	21.9	-66.6	ALL	DIRN.	SUR	51	0	0	18.6	18.1	25.9
41505	26.3	-66.3	ALL	DIRN.	SUR	5	0	0	10.9	14.7	18.3
41523	27.9	-62.5	ALL	DIRN.	SUR	204	2	1	59.4	1.6	59.4
41594	17.6	-73.8	ALL	DIRN.	SUR	138	1	1	15.7	-5.2	16.6
41611	13.5	-57.2	ALL	DIRN.	SUR	431	1	0	13.8	8.2	16.0
41616	21.8	-52.3	ALL	DIRN.	SUR	19	0	0	9.0	7.2	11.5
41630	19.5	-63.6	ALL	DIRN.	SUR	10	0	0	14.6	-6.8	16.1
41639	18.3	-59.6	ALL	DIRN.	SUR	137	0	0	15.3	2.1	15.5
41642	18.5	-64.1	ALL	DIRN.	SUR	172	5	3	15.8	5.1	16.6
44739	44.3	-57.4	ALL	DIRN.	SUR	1	0	0	0.0	-31.3	31.3
44743	45.0	-11.0	ALL	DIRN.	SUR	1077	5	0	19.1	3.7	19.5
44762	45.1	-19.4	ALL	DIRN.	SUR	1	1	100			
44810	41.1	-66.6	ALL	DIRN.	SUR	1	0	0	0.0	3.3	3.3
44811	41.1	-66.6	ALL	DIRN.	SUR	1	0	0	0.0	-20.6	20.6
46743	45.2	-12.0	ALL	DIRN.	SUR	1	0	0	0.0	6.0	6.0
62506	35.7	-33.6	ALL	DIRN.	SUR	167	0	0	11.4	-3.9	12.1
62508	35.4	-17.0	ALL	DIRN.	SUR	494	0	0	14.9	-8.6	17.2
62705	54.9	-12.6	ALL	DIRN.	SUR	1	0	0	0.0	0.6	0.6
62829	48.7	-12.4	ALL	DIRN.	SUR	1	0	0	0.0	10.0	10.0
62881	51.0	-13.3	ALL	DIRN.	SUR	1	0	0	0.0	-4.5	4.5
64845	59.1	-11.4	ALL	DIRN.	SUR	1	0	0	0.0	16.7	16.7

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	2739	0	4	1.4	0.1	2727	0	5	0	7.2	1.0
ACA	1295	0	2	1.5	0.2	1301	0	3	0	6.2	0.7
AEA	281	1	4	1.8	0.5	277	0	5	0	10.1	0.4
AEL	279	5	17	2.6	0.4	285	0	10	0	7.7	0.9
AEY	20	0	0	2.0	1.6	20	0	10	0	19.1	1.6
AFL	285	0	2	1.5	0.3	287	1	4	0	6.6	0.4
AFR	1078	1	6	1.6	-0.1	1092	0	6	0	7.0	0.8
AIH	123	2	7	1.3	0.0	125	0	6	0	8.0	0.9
AJM	93	0	1	1.6	-0.1	97	0	3	0	6.9	1.5
AMM	71	4	10	1.8	0.8	73	1	7	0	8.7	1.3
AMX	147	3	8	2.1	0.6	150	0	6	0	10.9	1.8
ANZ	146	0	54	1.6	-0.8	143	0	57	0	6.0	0.3
AOM	308	0	3	1.6	0.4	312	0	5	0	8.9	1.0
AVA	206	1	3	1.6	0.2	208	0	7	0	9.9	1.0
AZA	465	5	43	3.2	1.2	480	0	8	0	8.6	0.6
BAL	136	0	12	1.3	0.0	137	1	16	0	8.4	0.5
BAW	1200	0	6	1.7	0.1	1188	0	7	0	7.9	1.0
BLX	31	0	6	1.1	-0.4	31	0	10	0	12.3	0.4
BWA	64	0	9	2.8	1.4	65	3	18	0	16.1	-2.5
CDN	179	0	8	1.6	0.2	181	0	8	0	7.0	1.0
CFG	424	0	2	1.6	-0.8	430	0	3	0	8.3	0.9
CLX	284	1	2	1.3	-0.6	285	1	3	0	6.5	0.7
CMM	76	0	1	1.3	-0.1	77	0	4	0	7.5	2.2
COA	456	0	7	1.6	-0.1	463	0	10	0	10.9	2.2
CRL	191	2	5	1.9	0.4	188	1	4	0	8.3	1.4
CTB	20	0	0	1.2	0.4	20	0	0	0	5.1	0.6
CUB	73	0	3	2.1	1.2	74	0	3	0	10.0	-0.6
DAL	1188	0	18	1.4	-0.3	1226	0	19	0	7.9	0.6
DBY	200	0	4	1.3	-0.2	202	0	4	0	7.3	1.4
DLH	1280	0	6	1.5	0.0	1283	0	6	0	6.9	0.5
EDW	40	0	3	1.4	-0.4	40	0	3	0	7.0	2.8
EEZ	47	2	100	3.1	1.4	46	0	15	0	9.3	0.2
EIA	23	0	0	2.4	-0.7	24	0	4	0	14.6	5.9
ELY	86	0	6	1.6	-0.2	89	0	7	0	7.3	1.7
ETH	25	0	8	1.7	0.1	24	0	8	0	5.5	0.3
EWW	124	0	6	1.4	-0.1	125	0	9	0	10.2	0.6
FDX	755	0	25	1.4	0.4	760	0	25	0	7.9	1.3
FIN	418	0	3	1.4	0.3	408	1	4	0	6.5	0.7
GAF	32	0	0	1.6	-0.6	35	0	0	0	4.0	0.3
GCO	133	1	8	2.1	0.3	143	1	100	0	17.7	3.4
GRL	40	0	0	1.4	0.3	40	0	3	0	6.2	0.6
GTI	153	1	5	1.5	-0.4	149	0	5	0	8.2	0.8
HLF	66	0	2	1.1	-0.4	66	0	2	0	7.3	1.7
IBE	1113	1	10	1.9	0.5	1101	0	11	0	9.4	1.1
ICE	1031	0	2	1.4	0.2	1005	0	3	0	7.1	0.7
IWD	26	0	0	0.9	-0.6	27	0	4	0	9.0	-0.8
JKK	204	0	4	1.2	0.0	185	0	5	0	7.9	1.2
JMC	131	1	8	1.3	0.9	128	0	13	0	11.6	1.4
KLM	1369	0	7	1.4	0.3	1375	1	9	0	7.7	0.7
LDA	87	0	3	1.6	-0.2	93	0	2	0	5.5	0.9
LDI	292	0	100	1.3	-0.4	289	1	8	0	9.9	0.5
LIB	61	0	3	2.1	0.5	60	0	3	0	8.0	1.4
LOT	226	0	3	1.6	-0.8	219	0	5	0	6.2	0.3
LTU	309	0	6	1.6	-0.3	311	0	5	0	7.3	1.7
MAS	24	0	4	1.6	0.9	24	4	13	0	12.6	3.1
MON	22	0	0	1.3	-0.3	22	0	0	0	5.9	2.3
MPD	139	1	5	1.7	0.0	137	1	7	0	8.4	1.1
MPH	517	0	3	1.6	-0.5	520	0	3	0	7.1	1.0
NCA	28	0	4	1.7	0.5	28	4	11	0	12.1	0.4

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
NVR	33	0	3	2.4	0.1	33	0	3	0	6.6	2.2
NWA	3155	1	2	1.4	0.4	3114	0	2	0	7.1	0.8
OAL	28	0	0	1.1	0.0	28	0	0	0	7.2	2.5
PAC	118	0	5	1.5	0.3	128	0	8	0	8.3	1.7
RAM	53	4	13	1.5	-0.9	52	2	13	0	11.3	-1.4
RCH	58	5	9	2.0	0.8	63	0	13	0	15.0	2.8
RJA	26	0	0	0.9	-0.1	28	0	0	0	5.0	1.7
RRR	57	2	11	1.7	-0.7	57	0	9	0	7.1	1.9
RZO	59	0	14	1.7	-0.1	57	0	14	0	11.8	0.1
SAS	78	0	22	1.4	-0.2	77	0	21	0	6.3	0.3
SIA	98	0	3	1.7	-0.7	98	1	5	0	7.1	0.7
SLR	122	2	12	1.2	-0.3	126	0	10	0	6.0	0.8
SVA	69	0	3	1.5	-0.1	76	0	3	0	6.4	1.5
SWR	58	0	5	1.0	0.3	59	0	7	0	11.5	1.4
TAP	207	1	10	1.7	0.0	207	0	12	0	10.6	1.5
TLX	26	0	4	1.8	0.2	26	0	0	0	5.3	0.3
TSC	24	0	13	2.9	-1.4	26	0	15	0	9.5	3.2
TWA	858	0	5	1.9	0.3	828	0	6	0	7.6	1.4
UAL	1544	0	100	1.5	0.0	1555	0	100	0	6.0	0.7
UPS	834	0	28	1.8	0.2	839	0	27	0	7.1	0.8
USA	338	1	3	1.2	0.0	298	0	4	0	9.0	1.3
VIR	505	0	1	1.3	-0.1	508	0	3	0	7.8	0.8
VKG	74	0	3	1.9	-0.2	73	0	3	0	8.8	2.0
VPB	29	3	7	1.7	-0.1	31	3	6	0	7.8	1.5
WOA	97	0	6	1.6	0.9	99	2	11	0	8.2	1.2
EU	18002	0	14	1.1	0.0	18002	0	14	0	4.9	0.7
KL	3570	0	17	1.2	0.8	3555	0	17	0	4.8	1.1
LH	284	0	5	1.5	0.9	284	0	5	0	4.4	1.0
N	405	1	6	2.3	0.6	417	0	4	0	7.6	1.2
ACARS	26700	5	32	1.3	0.4	26700	0	24	0	5.7	1.2

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
EHOA	12	Z	100	1	0	0.0	35.0	35.0
ELML7	00	Z	100	6	0	6.2	21.7	20.8
ELML7	12	Z	100	9	0	11.4	24.1	21.2
FNOR	00	Z	100	10	0	10.4	31.1	29.3
FNOR	12	Z	100	9	0	10.0	25.2	23.1
FNOU	00	Z	100	8	0	10.7	35.2	33.5
FNOU	12	Z	100	9	0	12.7	30.2	27.3
FNPH	00	Z	100	9	0	11.1	22.8	19.9
FNPH	12	Z	100	10	0	12.5	20.2	15.8
FNRS	00	Z	100	8	0	10.8	23.0	20.3
FNRS	12	Z	100	11	0	13.2	20.8	16.1
LDWR	00	Z	100	26	0	14.9	19.3	-12.4
LDWR	12	Z	100	27	0	14.2	22.1	-16.9
OVYA2	00	Z	100	15	0	21.5	22.7	-7.1
OVYA2	12	Z	100	13	0	8.8	9.9	-4.5
OXYH2	00	Z	100	13	0	17.3	25.8	-19.1
OXYH2	12	Z	100	16	0	17.4	33.0	-28.1
WTEC	00	Z	100	3	0	9.2	31.4	30.0
WTEC	12	Z	100	4	0	9.4	66.7	66.0
ZCBP6	00	Z	100	7	0	12.0	12.6	3.9
ZCBP6	12	Z	100	5	0	11.4	11.4	-1.2
03953	00	Z	100	29	0	11.4	15.9	11.1
03953	12	Z	100	29	0	19.1	19.7	4.9
04018	00	Z	100	26	0	10.8	10.9	1.7
04018	12	Z	100	30	0	15.3	15.8	3.9
04220	00	Z	100	29	0	10.5	10.7	-2.0
04220	12	Z	100	29	0	13.5	15.7	-8.0
04270	00	Z	100	26	0	11.2	18.6	-14.8
04270	12	Z	100	30	0	14.3	20.9	-15.3
04339	00	Z	100	28	0	17.4	17.9	4.3
04339	12	Z	100	26	0	13.7	15.0	-6.1
04360	00	Z	100	29	0	9.4	9.4	-0.2
04360	12	Z	100	30	0	8.8	16.3	-13.7
08001	00	Z	100	26	0	23.3	23.4	-2.7
08001	12	Z	100	29	0	21.0	26.0	-15.3
08508	00	Z	100	26	0	11.2	29.6	27.4
08508	12	Z	100	28	0	15.9	33.0	28.9
08522	12	Z	100	17	0	7.7	20.1	18.6
08594	12	Z	100	17	0	30.3	35.7	18.9
60020	00	Z	100	28	0	16.3	36.5	32.7
60020	12	Z	100	29	0	18.4	32.7	27.0
71600	00	Z	100	29	0	10.8	11.7	-4.5
71600	12	Z	100	29	0	13.6	15.5	-7.3
72201	00	Z	100	24	0	18.5	20.9	9.7
72201	12	Z	100	23	0	35.2	35.4	4.0
72402	00	Z	100	29	0	14.2	26.6	22.5
72402	12	Z	100	28	0	15.2	28.2	23.7
74494	00	Z	100	25	0	15.7	17.9	-8.7
74494	12	Z	100	27	0	12.0	19.4	-15.3
78016	00	Z	100	27	0	19.4	39.3	34.2
78016	12	Z	100	26	0	17.6	36.7	32.2

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DASAP1	12	Z	500	2	0	20.0	20.2	-3.0
EHOA	12	Z	500	2	0	4.0	29.3	29.0
ELML7	00	Z	500	11	0	5.9	11.9	10.3
ELML7	12	Z	500	18	0	12.4	14.7	8.0
FBCG	12	Z	500	1	0	0.0	20.0	20.0
FNOR	00	Z	500	10	0	7.4	8.7	4.5
FNOR	12	Z	500	11	0	9.8	10.4	3.5
FNOU	00	Z	500	9	0	14.5	19.6	13.2
FNOU	12	Z	500	10	0	18.4	21.5	11.2
FNPH	00	Z	500	10	0	6.1	7.2	3.8
FNPH	12	Z	500	11	0	6.3	8.6	5.9
FNRS	00	Z	500	9	0	4.4	5.0	2.4
FNRS	12	Z	500	13	0	11.9	12.1	1.9
LDWR	00	Z	500	26	0	8.2	8.8	-3.0
LDWR	12	Z	500	27	0	12.7	14.8	-7.6
OVYA2	00	Z	500	16	0	19.2	19.2	-0.9
OVYA2	12	Z	500	15	0	6.1	7.1	3.7
OXYH2	00	Z	500	16	0	7.5	15.5	-13.5
OXYH2	12	Z	500	20	0	11.3	20.5	-17.0
WTEC	00	Z	500	4	0	5.7	25.9	25.3
WTEC	12	Z	500	5	0	4.5	24.2	23.8
ZCBP6	00	Z	500	8	0	12.2	13.2	5.0
ZCBP6	12	Z	500	5	0	12.9	13.5	3.8
03953	00	Z	500	29	0	11.9	12.3	3.0
03953	12	Z	500	29	0	14.2	15.4	6.1
04018	00	Z	500	29	0	7.3	8.7	4.8
04018	12	Z	500	30	0	9.4	13.7	10.0
04220	00	Z	500	29	0	9.7	9.8	-1.7
04220	12	Z	500	30	0	9.4	11.7	-6.8
04270	00	Z	500	29	0	10.5	10.6	1.3
04270	12	Z	500	30	0	8.2	8.2	0.2
04339	00	Z	500	27	1	10.3	11.9	5.9
04339	12	Z	500	26	0	11.5	11.8	2.4
04360	00	Z	500	29	0	7.2	7.2	0.6
04360	12	Z	500	30	0	9.2	9.6	-2.9
08001	00	Z	500	28	0	14.5	14.9	-3.6
08001	12	Z	500	30	0	12.0	12.1	-1.9
08508	00	Z	500	28	0	11.4	13.4	7.2
08508	12	Z	500	28	0	10.2	14.8	10.7
08522	12	Z	500	17	0	6.6	11.1	8.9
08594	12	Z	500	21	0	14.8	14.8	-0.6
60020	00	Z	500	29	0	10.2	14.6	10.4
60020	12	Z	500	29	0	13.0	16.8	10.6
71600	00	Z	500	29	0	11.2	12.2	-4.9
71600	12	Z	500	29	0	9.9	13.4	-8.9
72201	00	Z	500	24	0	7.0	7.6	-3.0
72201	12	Z	500	23	0	8.8	12.9	-9.3
72402	00	Z	500	29	0	8.7	9.4	3.7
72402	12	Z	500	28	0	8.1	8.1	0.2
74494	00	Z	500	28	0	10.3	12.5	-7.1
74494	12	Z	500	27	0	9.5	13.3	-9.3
78016	00	Z	500	27	0	20.9	27.3	17.6
78016	12	Z	500	27	0	17.7	21.5	12.1

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	100	5	0	0	1.9	-0.5	0.4
ELML7	12	V	100	7	0	0	3.6	0.6	-1.1
FNOR	00	V	100	6	0	0	6.1	0.8	0.5
FNOR	12	V	100	8	0	0	6.9	-0.8	-2.8
FNOU	00	V	100	2	0	0	3.6	1.9	1.8
FNOU	12	V	100	3	0	0	5.2	1.4	-3.2
FNPH	00	V	100	9	0	0	5.1	1.1	1.0
FNPH	12	V	100	10	0	0	4.8	0.7	0.9
FNRS	00	V	100	6	0	0	4.3	0.7	0.1
FNRS	12	V	100	5	0	0	3.4	1.0	0.6
LDWR	00	V	100	27	0	0	2.9	0.2	-0.2
LDWR	12	V	100	27	0	0	2.7	-0.5	0.2
OVYA2	00	V	100	10	0	0	3.0	0.1	0.3
OVYA2	12	V	100	6	0	0	3.6	-0.5	-2.5
OXYH2	00	V	100	8	0	0	3.1	1.0	0.8
OXYH2	12	V	100	11	0	0	3.3	-1.2	-0.7
WTEC	00	V	100	2	0	0	6.8	-4.0	-3.2
WTEC	12	V	100	4	0	0	9.7	-6.0	1.1
ZCBP6	00	V	100	4	0	0	3.9	0.3	0.1
ZCBP6	12	V	100	5	0	0	3.0	0.0	-2.2
03953	00	V	100	28	0	0	3.8	1.4	1.3
03953	12	V	100	29	0	0	4.2	0.4	0.6
04018	00	V	100	25	0	0	3.1	-1.0	-0.9
04018	12	V	100	29	0	0	3.3	0.8	-0.2
04220	00	V	100	29	0	0	3.5	-0.5	0.0
04220	12	V	100	28	0	0	4.6	0.1	0.0
04270	00	V	100	26	0	0	4.5	-1.1	0.4
04270	12	V	100	29	0	6	6.3	-1.1	-0.2
04339	00	V	100	26	0	7	7.9	-1.0	0.4
04339	12	V	100	25	0	0	5.4	1.4	-0.5
04360	00	V	100	29	0	0	4.6	-0.9	0.3
04360	12	V	100	30	0	0	4.3	-0.6	0.7
08001	00	V	100	26	0	0	6.2	1.7	1.1
08001	12	V	100	29	0	0	5.2	0.5	-0.1
08508	00	V	100	19	0	0	6.3	1.7	-0.1
08508	12	V	100	14	0	0	3.5	-0.3	0.1
08522	12	V	100	17	0	0	5.2	0.5	-0.6
08594	12	V	100	18	0	100	7.0	-1.2	4.6
60020	00	V	100	21	0	0	5.0	1.9	-0.7
60020	12	V	100	24	0	0	5.1	0.9	0.3
71600	00	V	100	29	0	0	4.2	0.8	-0.3
71600	12	V	100	29	0	0	3.0	0.6	0.1
72201	00	V	100	23	0	0	4.3	-1.2	1.5
72201	12	V	100	23	0	0	4.0	-0.7	-0.5
72402	00	V	100	28	0	0	4.8	0.2	0.1
72402	12	V	100	27	0	0	3.8	-0.2	1.1
74494	00	V	100	24	0	0	3.1	0.0	0.3
74494	12	V	100	26	0	0	3.7	0.0	1.3
78016	00	V	100	27	0	0	5.0	1.3	0.7
78016	12	V	100	24	0	0	4.8	1.1	-0.4

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: NOVEMBER 2000

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:UBIAS,VBIAS: Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS              NUM    NUM     %
IDENT  TIME ELM  LEV   OBS   GROSS   REJ     RMS    UBIAS   VBIAS

DASAP1  12   V   500     2      0      0     3.9    -0.9    -2.6
ELML7   00   V   500    10      0      0     4.0    -1.2    -0.2
ELML7   12   V   500    14      0      0     4.6    -0.3     0.3
FNOR    00   V   500     7      0      0     3.3    -0.2     0.6
FNOR    12   V   500     9      0      0     3.8    -1.4     0.3

FNOU    00   V   500     5      0      0     4.2    -0.4     0.6
FNOU    12   V   500     6      0      0     5.1     0.0     0.7
FNPH    00   V   500    10      0      0     3.9     1.1     0.3
FNPH    12   V   500    10      0      0     5.7    -0.9     2.3
FNRS    00   V   500     8      0      0     4.1    -0.5     0.2

FNRS    12   V   500     6      0      0     4.7    -1.8     1.5
LDWR    00   V   500    26      0      0     4.2    -0.2     0.1
LDWR    12   V   500    27      0      3     8.5    -1.6     0.3
OVYA2   00   V   500    11      0      0     3.2    -0.6     0.0
OVYA2   12   V   500     7      0      0     3.8    -1.5    -0.3

OXYH2   00   V   500    11      0      0     4.0     0.3     0.1
OXYH2   12   V   500    13      0      0     4.1     0.5     0.3
WTEC    00   V   500     3      0      0     1.6     0.1     1.0
WTEC    12   V   500     5      0      0     3.3    -0.3     1.5
ZCBP6   00   V   500     6      0      0     3.2    -0.7    -0.9

ZCBP6   12   V   500     5      0      0     3.9     0.8     0.9
03953   00   V   500    29      0      0     5.0     0.3     1.1
03953   12   V   500    29      0      0     6.7     2.0    -0.2
04018   00   V   500    29      0      0     4.5     0.0    -1.0
04018   12   V   500    30      0      0     4.1    -0.1     0.8

04220   00   V   500    29      0      0     4.9    -0.6     0.1
04220   12   V   500    29      0      0     5.9     0.4     0.7
04270   00   V   500    27      0      0     4.1    -1.0     0.2
04270   12   V   500    30      0      0     4.8     0.6     1.5
04339   00   V   500    28      0      0     5.4    -0.6    -0.5

04339   12   V   500    26      0      0     4.4     0.4     0.7
04360   00   V   500    29      0      0     3.7    -0.7     0.5
04360   12   V   500    30      0      0     4.3    -0.2     0.9
08001   00   V   500    28      0      0     5.7     1.8     2.0
08001   12   V   500    30      0      0     5.5     0.5    -0.8

08508   00   V   500    20      0      0     5.5     1.1    -0.6
08508   12   V   500    14      0      0     3.8    -0.1    -0.1
08522   12   V   500    17      0      0     3.6     0.1     0.2
08594   12   V   500    23      0    100     5.5    -0.6     0.8
60020   00   V   500    24      0      0     3.6     0.1     0.3

60020   12   V   500    25      0      0     3.4     0.0     0.1
71600   00   V   500    29      0      0     5.1     0.3     0.7
71600   12   V   500    29      0      0     5.4     1.5     1.5
72201   00   V   500    24      0      0     3.3     0.2    -1.0
72201   12   V   500    23      0      0     2.9     0.5    -0.2

72402   00   V   500    28      0      0     4.4     1.0     0.5
72402   12   V   500    28      0      0     3.3    -0.3     0.2
74494   00   V   500    28      0      0     4.0    -0.7     0.1
74494   12   V   500    27      0      0     3.6     0.0    -0.2
78016   00   V   500    27      0      0     5.2     0.5    -0.9

78016   12   V   500    26      0      0     5.0     1.0     0.9
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45